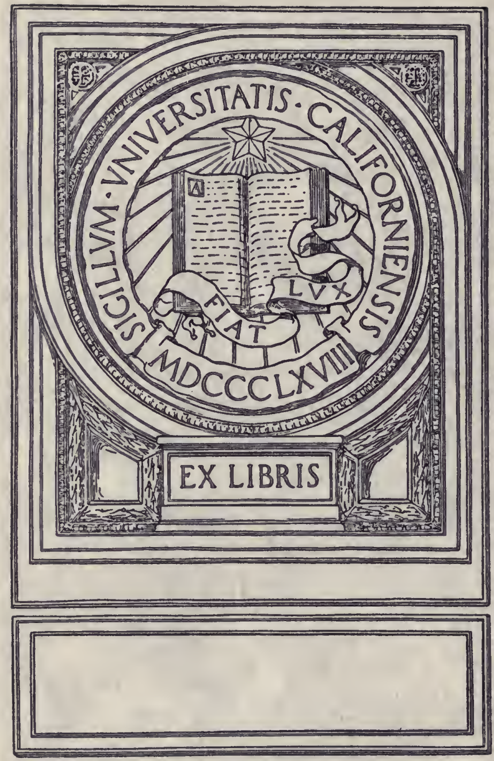

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REASON
IN
ARCHITECTURE

REASON
IN
ARCHITECTURE

LECTURES
DELIVERED AT THE ROYAL ACADEMY
OF ARTS IN THE YEAR 1906

BY Green

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"HISTORY OF THE CHURCH OF ST. MARY
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PREFACE

PART of the following chapters formed the substance of two lectures on Architecture given by invitation last year at the Royal Institution. Addressing a mixed audience I thought it a useful opportunity for presenting the subject under a different aspect from the usual one, and for showing that the purely archæological side of Architecture which is generally studied cannot rightly be regarded as sufficient for the general public, and still less for practising Architects.

During the vacancy of the Professorial chair at the Royal Academy I was asked by the Council to undertake the lectures on Architecture this year; and I thought no treatment of the subject would be more useful than this, either to the students or to others who were present. The original lectures were therefore rewritten, fresh chapters and illustrations were added, and the result is now offered to the public in the hope that it may help those

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into whose hands it falls to what, I submit, is a truer intelligence of our Art.

The moral it is intended to point is briefly this. That the styles of the past, which we have been taught to take as our models, assumed the forms, under which we know them, not from arbitrary design or fancy, but as a consequence of rational and logical development from causes partly external and partly social, which are discoverable, and without knowing which the style is only imperfectly understood. That the external causes may practically be summed up under the head of necessities or conveniency of construction. That, as in the past progress and fresh departures in the Art can be accounted for by changes in conditions such as these, from one generation to another, so at the present day our Architecture will depend for its vitality upon its accommodation to the circumstances of the day. Consequently, that the mere blind following of ancient example in which most modern schools have thought to find safety will lead us no whither ; that Archæology is not Architecture; and that it is the spirit rather than the letter of the great styles of the past that will be of use to us.

Thirty-three years ago I pleaded for this view of modern Architecture in words almost the same as the foregoing,* which were then freely denounced as heresy. Since that time opinion has changed a good deal, but old superstitions die hard, and there is still need for fresh argument to combat the tyranny of the Schools.

In conclusion, I have to thank the editors of the *Builder* and the *Building News* for their courtesy in allowing the reproduction of Plates XI. and XII. from prints in their papers. The other illustrations not specially acknowledged are either from photographs or from my own sketches.

T. G. JACKSON.

EAGLE HOUSE, WIMBLEDON,
March 31, 1906.

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* "Modern Gothic Architecture." (Henry King and Co. 1873.

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CHAPTER I

INTRODUCTION. ARCHITECTURE AND ARCHÆOLOGY

ARCHITECTURE has been talked about and written about perhaps more than either of her two sisters, Painting and Sculpture, and the printed works on the subject would more than stock a good-sized library. It has been treated from many points of view. There are practical works on building construction which scarcely rise to the level of the artistic conception of Architecture, but must necessarily enter into the course of study which the practical architect has to pursue. Works abound dealing with Architecture solely from the pictorial aspect—works of various degrees of merit, from the mere picture-book fitted to lie on the drawing-room table to the careful etchings of Piranesi and Rossini, Cotman and Coney, in past generations, and the innumerable reproductions of buildings in modern illustrations by process or photography. Then there are the learned treatises of the Masters of the Classic Renais-

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sance, Palladio, Serlio, Vignola, Perrault, Chambers and others, in which are given recipes for the production of Architecture according to the precepts of Vitruvius; and there are the more modern works of the Gothic Revivalists, with minute measurements of the great buildings of the Middle Ages, from the general mass down to the smallest detail of cusp or moulding, and with all their varieties of decoration by sculpture, mosaic, painted glass, and mural ornamentation in diaper or colour. Lastly, there have been lectures on Architecture delivered within the walls of the Royal Academy every year with little interruption since its foundation in 1768, some of which have been published, and may still be read with profit. Among those who have occupied the professorial chair we find names of architects who have been distinguished in various schools, from Soane and Cockerell, who were leaders in the neo-Greek revival, to Scott, whose valuable lectures I well remember attending while I was his pupil, and Street, both of them champions of the Gothic revival. For many years past lectures have been given by the latest occupant of the chair on many of the great works of Roman antiquity, about which no one is better qualified to speak, and lately on Vitruvius, the sole Classical writer about our Art, from whom for many centuries it was thought the true secrets of ancient Architecture were to be recovered, though of late doubts have been raised—doubts that would once have been thought profane—whether the author of the work "De Architectura" were an architect at all and not merely a dilettante writing in the time of Titus, long after the period to which he had generally been assigned.

With all this amazing bibliography about Architecture accessible to the student one may well ask oneself whether anything remains to be said about it: whether all that can be said has not been said already by others.

In one particular I think it must be admitted that they have fairly covered the whole ground. So far as observation of the Architecture of the past goes they have left us little or nothing to do. There seems to be no old Architecture in Europe left to explore and describe; everything is known and published that is likely to be of any use to us; and with what lies outside Europe, beyond an intelligent interest, we have as architects no direct concern. It has been with the archæology of Architecture that books and lectures have in the vast majority of cases been concerned, and from that side of the subject there is little opportunity of saying anything new. But Architecture has another side than that which is turned towards antiquity, and reflects the past; and a good deal remains to be said on the subject of modern practice and the principles according to which it should be guided; and a good deal more also may be learned about the principles by which the growth of ancient Art was shaped, and which have been in great measure overlooked, while attention has been given too exclusively to the outward phenomena of Style.

In its relation to archæology Architecture differs widely from the other Arts. It is true that the painter and sculptor study from the antique, and still get, or profess to get, from the works of the Classic Age the best lessons in their Art and the best training for their own future career. But they use the antique only for the purpose of education; they learn from it to draw the figure, to compose their draperies, to acquire grace in composition and simplicity in expression. And beyond that they make no direct use of ancient example—at all events, not at the present day. Thorwaldsen, Canova, and Flaxman no doubt intentionally imitated Classical treatment up to a certain point, and down to the time of Chantrey, in deference to ancient example, the statues of modern men were exposed to the severity of the English climate in nudity or with the scanty protection of unseasonable togas. But the sculptor of to-day is nothing if not modern—one may almost say ultra-modern when we regard the latest outcome of the Art in France.

To the painter the temptation to imitation of the antique is naturally feebler, for so little is known of ancient painting that it was impossible to copy it, and the pretended Classical Schools of the First Empire were to all intents and purposes as modern as the Art of to-day.

But with Architecture it has been different for a variety of reasons. In the first place, the architect is not so free as other artists to give the reins to his fancy. Poets and painters, Horace tells us, have always been allowed any feats of daring, but in most of his work the architect is bound to consider utility as well as beauty, for his buildings are not only to be looked at but to be lived in. He is therefore restricted to designs that combine

Art with convenience; he must satisfy the demands of the social habits of the day; and as they alter but very slowly there results a certain consistency and uniformity in the Architecture of any period. And so while the painter may let his imagination range over the whole visible creation, and even soar above and beyond it, giving us

> The light that never was on sea or land,
> The consecration, and the Poet's dream,

the architect has to remember that every Englishman expects to have his drawing-room, his dining-room, his study, so many bedrooms, and the usual offices, and that as he lives much in the same way as his neighbours he must be housed pretty much in the same fashion as they are. This to some extent fixes limits to the architect's imagination; and though, if he really be an artist, he will find plenty of room within them to display his invention, still there are certain conventional arrangements which oblige him to conform to an accepted type. And this type really changes very slowly and imperceptibly: the house of to-day, but for the addition of sundry modern comforts demanded by the greater luxury of the age, and certain concessions to sanitary science, is very much the same as the house of the time of William and Mary, or even that of the Stuarts. The churches we worship in are planned and arranged much as they have always been for centuries. Everything tends to establish the rule of precedent and example, and to make us look backward when a task is set us to see how it has been done by those who have gone before. A certain conservatism, therefore, is forced upon the architect which, while it leaves his legitimate freedom unimpaired within certain limits, nevertheless forces him to keep his fancy within those bounds, and to refer in what he does to the example of his predecessors.

This naturally brings Architecture into touch with archæology, or at least it has done so ever since the days when at the revival of learning men began to break with the present and look for guidance to antiquity. During the Middle Ages it was not so. The example men then sought was that of their contemporaries, and they treated antiquity with scant respect. But from the days when Brunelleschi with his friend Donatello studied the ancient remains in and about Rome with a passionate ardour that left him no time for eating or sleeping,* to those of the professors of the Renaissance who commented on the text of Vitruvius and made his works their gospel, and down to our own Gibbs, Chambers, and Stuart among the Classicists, and Pugin, Scott, Sharp, Viollet-le-Duc, Ruskin, and a host more among the neo-Goths, it has always been the past which has been held up to the student of Architecture as his model, and the careful study of antiquity has always been set before him as his only hope. How far it is right or wrong this is not the place to inquire; the point to be observed at this moment is that the circumstances under which Architecture is produced at any time tend to throw it back on convention and precedent, and that in modern times that precedent has generally been sought in antiquity.

There is another peculiarity that distinguishes our practice from that of our brother artists. The painter is his own handicraftsman: his work is the product of his own hands. Even when he avails himself of assistance it is confined to subordinate details, and is not enough to make the work less his own. The sculptor, of course, is obliged to call in assistance more than the painter, and, indeed, nowadays he has become more a modeller than a carver of stone or marble; but the model, at all events, is his own handiwork. The architect, however, cannot, from the very nature of things, be a craftsman in the same way as the painter or sculptor. His ideas cannot be realised without the labours of a host of workmen, on whose intelligence he must rely for the faithful performance of his intentions. So it has always been, even in the days when the professional architect in the modern sense of the word was not yet evolved, and when his place was occupied by the Master Craftsman, or Head Freemason, or Chief Builder, or whatever else he was called, who not only designed and superintended the work, but laboured on it with his own hands. Even then the proportion of his own actual handiwork in the building must have been trifling in amount, and was probably generally confined to the sculptured decoration, and other ornamental details, for sculpture and Architecture were then practised as one Art. But all this direct participation in the work is of course long gone by. The time is far distant when the architect bound himself to his employers to live so many years on the work, to undertake no other without their leave, to go to the quarries and see to the digging of the stone and its conveyance to the building, to procure labour, and "to work with his own hands both in building and in sculpture as befitted the reputation of any good sculptor and master of the stone-cutting art."* This picture is seductive enough to many of us, but the whole force of modern habit sets against it and makes any return to it impossible. The modern architect sits in his office and directs his work, which lies north, south, east, and west throughout the land, by letter and drawing. His own handiwork seldom goes beyond the drawing-board, and his ideas are translated into brick and stone, wood and metal, by others, under his casual and infrequent personal superintendence.

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* Egli e Donato . . . non lasciarono luogo che eglino e in Roma e fuori in campagna, non vedessino e non misurassino . . . e perchè era Filippo sciolto da le cure famigliari, datosi in preda a gli studj, nõ si curava di suo mangiare o dormire, solo l'intento suo era 'architettura.—Vasari, Vita di Filippo Brunelleschi.

Now it has always been the case that the most fertile suggestions for fresh developments in Architecture, no less than in the other Arts, come from actual handiwork, and it may easily be understood that an architect living on the site, spending his whole time on his building, and working on it with his own hands, would find many more opportunities for original design than one who made his plans a hundred miles away, and perhaps seldom saw the work before it was finished. There is no room in such office-work for the suggestions of accident. As the smith hammers out his leaf, or draws his bar and twists it into scrolls or spirals, it will assume many an unintended shape, which may arrest his attention and lead him to vary his design from the intended pattern into something novel and more interesting. The architect who may have drawn the pattern for him sees nothing of this, and misses the opportunity which the handicraftsman enjoys of putting fresh life into his work. And so on the larger scale of Architecture, one of the charms of an ancient building consists in the unaffected and natural devices by which some little awkwardness in plan, or difficulty of construction, is met and overcome. They show thought, and bring the personality of the artist into view, and invest the work with a lively human interest. And these difficulties when they come in greater number and of larger importance have led in the past, as we shall explain by and by, to radical and progressive changes from style to style. But in order to seize these opportunities the architect must be on the spot, and when this ceased to be the practice, and the craftsman-architect gave way at the Renaissance to the professional architect, the Art inevitably stiffened into a matter of rule and precedent, worked out on paper and rigidly enforced on the workman. As time went on Architecture became more and more a matter of archæology, and bound itself in fetters of rules and formulas, based on antique example, till the Classic orders were regulated by text-books in proportions of module and minute with all the scrupulous accuracy of an apothecary's prescription.

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* ". . . procurare laborare, et laborari facere aliis laboratoribus omnia et singula laboreria hœdificia necessaria ad ornamentum et fabricam ipsius ecclesia, et laborare de sua manu tam in fabricando quam in sculpendo ad laudem cujuslibet boni sculptoris et magistri artis lapicidæ."—Contract with Giorgio Orsini, A.D. 1441, for the erection of the Cathedral of Sebenico. *v.* My "Dalmatia, the Quarnero and Istria," vol i., p. 416. See also several interesting contracts with master masons as architects in Street's "Gothic Architecture in Spain," chap. xxi. One of them is described as a "master maker of churches."

The Gothic revival at the end of the eighteenth century was a rebellion against this tyranny of the schools. At first little more than a sentimental freak of the Romanticists, and in Horace Walpole's hands not much more serious than Sir William Chambers's Chinese pagoda at Kew, or Nash's Indian Pavilion at Brighton, it soon asserted itself as a radical revolution in principle, and broke completely with the current Art of the day. The pedantry of the five orders and all that belonged to them was flung aside; under the banner of Gothic Art men believed they had found freedom from formula, and room for the display of common sense. But the force of habit was too strong. Scarcely were they free from the shackles of the old tyranny before they began to forge new fetters for themselves and to reduce the new style of their adoption to rule and precedent, after the manner of Vignola or Chambers. Batty Langley actually undertook to divide Gothic Art into five orders to make it correspond with Classic; and though this absurd idea failed, as might have been expected, the attempt to regularise the style went on. Text-books of all kinds appeared; measured drawings of ancient buildings were published in profusion; Architectural Societies and Museums devoted to the study of Gothic Art sprang up all over the country, and the exclusive attention paid to the example and precedent of mediæval work soon established a new tyranny scarcely less rigid than the old. Forty years ago, when, as some of us will remember, the Gothic movement was at its flood, the intolerance of its promoters rivalled that of the men of the Early Renaissance. If Palladio decried Gothic Architecture as mere confusion and not Architecture at all, and if Vasari prayed Heaven to rid the earth of such barbarous work,* Renaissance Architecture fared no better at the hands of the Neo-Goths, who banned it as an accursed thing. Religion was dragged into the arena, and the Classic style, in defiance of all history, was branded as Pagan and anti-Christian. The most accurate imitation of old work was insisted upon, and the nearer approach of new work to ancient example was the generally accepted test of its excellence. Any deviation from the type was regarded with suspicion if not with condemnation, and chapter and verse were demanded as the authority for every departure, however slight, from the common run.

Much of this strictness has, of course, by this time disappeared, but a good deal still survives, especially in our ecclesiastical architecture in which archæology still plays the most prominent part.

There is one more link between architecture and archæology which must be mentioned, and that is the force of historical association; the influence of what Ruskin calls the "Lamp of Memory." He dwells upon the value of the association of Art with human life, and says:

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* Ma la maniera Tedesca si può chiamare confusione e non architettura.—" Letter of Palladio," Magrini, Appendix, p. 57.

Iddio scampi ogni paese da venir a tal pensiero ed ordini di lavori, &c.—" Vasari," Introd. cap. iii.

> "It is as the centralisation and protection of this sacred influence that Architecture is to be regarded by us with the most serious thought. We may live without her, and worship without her, but we cannot remember without her. How cold is all history, how lifeless all imagery compared to that which the living nation writes and the uncorrupted marble records. There are but two strong conquerors of the forgetfulness of men—Poetry and Architecture—and the latter in some sort includes the former, and is mightier in its reality; it is well to have not only what men have thought and felt, but what their hands have handled, and their eyes beheld." *

It is at first sight difficult to see why the force of association and memory should be so much stronger in the case of Architecture than in that of the sister Arts, but of the fact that it is so there can be no doubt. As we look at the Elgin marbles it is not their antiquity that impresses us. Reflection may bring to mind the thought that more than twenty-three centuries have passed over them; that they were carved in the time of Pericles; that the eyes of Socrates, Plato, and Alcibiades have beheld them, and that they have witnessed the fall of Athens and the rule successively of Rome, Byzantium, Venice, and the Moslem spoiler. But these are not the thoughts that come naturally to the front, nor those that touch us

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* "Seven Lamps of Architecture," chap. vi.

most nearly. It is their artistic perfection that strikes us; like Shakespeare they are not of an age but for all time; it is by their essential qualities that we estimate them, and not by their accidents, which may be forgotten.

In the same way as we stand before a masterpiece of Raffaelle we do not think of its being four centuries old; that its author was born in the year when Richard III. seized the throne of England; that when the *Madonna degli Ansidei* was painted in 1506 London was a little city of no more than 40,000 souls within its walls and gates, and some 20,000 more in its suburbs and contiguous villages.* If we are reminded of this it does not much affect us: such recollections do not seem germane to our consideration of the picture.

But there are scores of late Perpendicular Churches and houses no older than the time of Raffaelle, Michel-Angelo, and Titian, whose hoary walls seem to carry us back with them at once into a remote antiquity. We cannot separate Henry VII.'s tomb-house and chapel at Westminster, or Wolsey's Halls at Christchurch and Hampton Court from their historical associations, nor the great houses of the statesmen of Elizabeth and James from the memory of their builders. And even when no known history attaches to the building, and we are ignorant of its author, still we cannot forget the years it has seen, or the generations who have lived and died in it, or around it, since its foundations were laid.

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* "Social England," Traill and Mann, vol. iii., p. 511.

For all these reasons, some of them practical and some of them sentimental, the study of Architecture has struck its roots so deeply into the past that we cannot pluck it away, even were it desirable to do so. But there are many ways of using the example of those who have gone before; used in one way it may help us to do as well as they, and possibly better, or used in another it may betray us to our ruin; and if, situated as we are, it is inevitable that we should look backwards to the practise of bygone styles, it is important that we draw from them the right lessons, and are not misled into mistaking what is only an external form for a vital principle. It is mainly the latter that is of value to us for our modern use, and it is to principles rather than to the outward forms of Architecture that I propose to direct attention in what follows.

CHAPTER II

CONSTRUCTION AND STYLE. DEVELOPMENT OF THE CAPITAL

ARCHITECTURE, like History, may be regarded in either of two different ways. The old-fashioned way of studying History lay in accumulating the facts of bygone times; in mastering lists of kings and dynasties; in acquainting oneself with battles and sieges, wars and pacifications, treaties and alliances, invasions and counter-invasions; and in storing up in the memory the dates of all these events, and of the lives of the personages who played the chief part in them. This is one way in which history used to be taught, and is perhaps still taught in many places, and to the satisfaction of many people.

But by the serious student of the past a good deal more than this is now thought necessary before he can feel that he really understands the period he is studying. He tries to get really in touch with the people who played their part in it, and whose doings he finds recorded. To him all this knowledge of facts and dates and names will appear more or less superficial. He wants to know not only what the people of whom he reads did, but why they did it, and what they thought they were doing while they did it. To get at the real meaning and drift of the revolutions and reactions, and the ebb and flow of all the great movements that go to make history, he finds he must get behind the scenes, in order to know the actors personally, and to discover and appreciate the social ideas of the times in which they moved and by which their conduct was shaped. He will try to discover how much of what each man did was due to his own personal originality, and how much to the social influences that surrounded him and in the midst of which he was born and bred; how much in fact the man—the creature of the age—did or did not affect the character and tendency of the age that created him. It is to these researches and such as these that we now look for the discovery of the true secrets of History, and the right intelligence of those outward events which to the superficial student seem to make up the fabric of History itself.

And just as there is a true and a false way of studying History, so there is a true and a false way of considering Architecture; and hitherto unluckily the wrong way has been the one generally pursued. For, as it has been thought that the learning of dates and events in bygone times was learning History, so to very many people at the present day the study of Architecture seems to consist in acquainting oneself with its outward phenomena;—in learning to distinguish style from style, and to be able to tell at a glance to which period and date each example should be assigned.

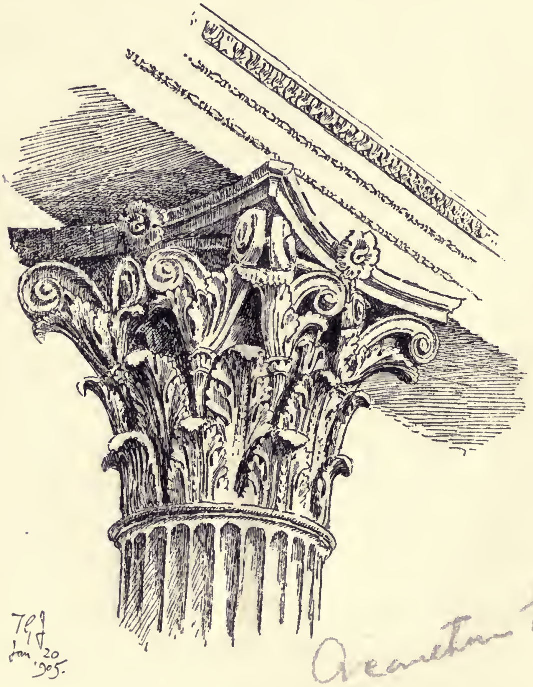
It is not, however, in this way that Architecture either past or present can really be understood. Knowledge such as this will never help us to use the art aright at the present day; nor does it lead us to the proper intelligence of the Architecture of the past, for Architecture is something more than archæology. The system of diagnosing by outward symptoms is as insufficient in the case of Architecture as in that of History. As regards History, this is now accepted as a truism, and it is time that the same principles were applied to the study of Architecture. For she is the most reasonable and logical of the Arts. In every step she ever made from style to style we may trace more or less distinctly a reason, in the influence exerted by some corresponding change in the men or the conditions of the day. It is by this that Art lives. A style is only a living style so long as it gives expression to the circumstances of the time, and the outward form it takes results from its more or less complete expression of them. To understand the expression you must know what it is trying to express, and the transition from one style to another will be unintelligible unless the corresponding change in men and manners, circumstances, and conditions of means and opportunity are also understood and appreciated. Those outward forms by which we know each style, and by which it differs from any other, are not the creation of artistic imagination solely, still less of fancy or caprice in the architect, but are in the main the outcome of suggestions of economy, or of limitations of means and material, or of convenience, and of adaptation to new needs and new social habits in those who made it what it is. In this respect Architecture differs somewhat from the sister Arts; for though painting and sculpture must no less than Architecture be expressive and representative of the age, failing which they are but dead Arts and not living ones, still they are not limited by the same considerations of economy and materials, but may abandon themselves more freely to the imagination.

It may seem paradoxical to say that Art in one of its forms must submit to any laws but such as are purely æsthetic. But it is so nevertheless. It is obvious that to *make* beautiful things must be a very different matter from depicting beautiful things on canvas, or representing them in marble. In both cases, no doubt, truth to Nature must be the guiding principle, but with the graphic arts truth bears a different meaning from that it has in the case of Architecture, which does not deal with direct imitation of natural form, but must nevertheless conform to natural laws. And so it is, as has been said already, that Architecture is the most reasonable of the Arts, and the most logical, because her outward form, when she is in a healthy state, results from obedience to conditions—natural and social—by which the other Arts are either not affected at all, or only in a lesser degree.

There have been, of course, instances of a conscious and deliberate change of architectural methods by the adoption of some preceding style for imitation. This happened at the Renaissance in the fifteenth, sixteenth and seventeenth centuries, and again in the last century when it was attempted to revive Gothic Architecture. But if we set aside these artificial diversions of the current it may be maintained—to speak generally—that at the root of every change that has taken place naturally in the history of Architecture lies some new departure in construction; and that the style of any particular time or place results primarily from conditions in the social life of the day which are ascertainable, and without understanding which the true meaning of Architecture at that particular period cannot be understood.

It does not do, of course, to push this theory to extremes in the case of every architectural detail and ornament, but it will be found to apply absolutely to the main constructive principles and the broader outlines of the forms assumed by every good and living style. And—more than this—its influence may often be traced even in the minor features of Architecture which are more purely decorative, and which might therefore be thought amenable only to considerations of a purely æsthetic nature.

It will perhaps be well to begin with a simple instance of this latter kind, before proceeding to illustrate the application of the principles of reasonableness to examples on a larger scale involving serious problems of construction. And in nothing is the working of constructive motives on a small scale shown more interestingly than in the gradual development of the capitals in Romanesque and Gothic work from those of the antique styles that preceded them, and in which they had their origin.



Acanthus plant

FIG. 1

Here (Fig. 1) is a sketch of a Roman Corinthian capital, taken from an antique example, used second-hand in the sixth century, in the Church of S. Lorenzo fuori le Mura at Rome. The type is familiar to every one, but for the sake of those who are not architects it may be useful to point out the principal elements in its construction. There is a pretty story told by Vitruvius of its invention by the Corinthian sculptor Callimachus in the fourth century before Christ, who is said to have been inspired by the sight of an acanthus plant growing round a basket with a tile on the top containing her toys or treasures which had been set down beside a virgin's tomb by her nurse.* Whether this incident suggested the design or the design suggested the story we need not stay to inquire. It serves, at all events, to explain the construction of the capital. The body of it is the bell representing the basket; on the top is the abacus or flat tile; and the acanthus leaves embrace the round basket and branch out at the corners and curl over under the angles of the square tile. The leaves are arranged in two tiers and placed alternately round the lower two-thirds of the bell, and from among them, on each of the four sides, spring a pair of caulicoli or leaf-stems, of which the lower leaves are developed and half open, while the upper are still closed, and curl over to form the volutes.

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* Vitruvius, Lib. iv. cap. i.

The four elements of the design are the abacus, the bell, the caulicoli, and the tiers of leaves, to which the rosette or flower in the middle of the abacus may be added as a fifth; and it is necessary to bear these features in mind while we trace the development of the capital through its various stages.

The first thing to observe about the Corinthian capital is that its strength is in the solid bell which is its core. The abacus is thin and would snap at once were any weight put upon it; for the volutes, which support it in the artistic sense of the word, add nothing to its strength, being themselves very slight and also cut through behind for lightness of effect. Consequently the capital will only carry safely a load whose area does not exceed that of the solid core, and does not bear on the delicate angles. In practice it is the rule in Classic architecture that the load should be no wider than the diameter of the column at its top, just below the necking.

This rule applies not only to trabeated construction—that is construction with horizontal lintels, as in the peristyles of Classic temples, and in the example shown by Fig. 1—but also to the springers of arches, when the arch is made to start directly from the capital, as in the peristyle of the Palace of Diocletian at

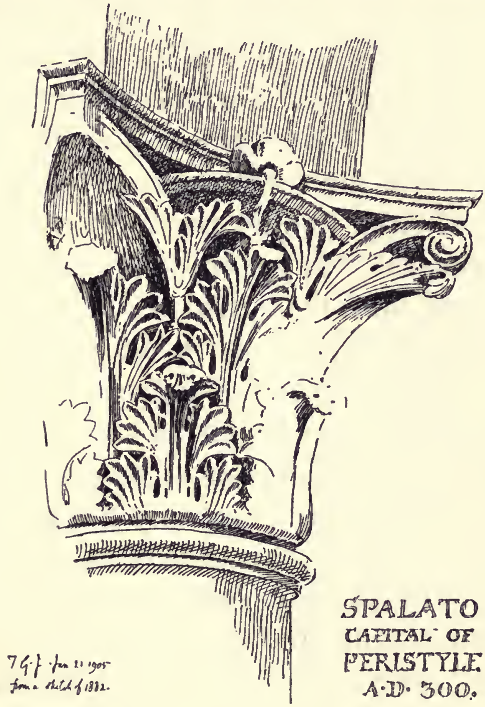

FIG. 2

Spalato in Dalmatia. Fig. 2 shows one of these capitals, in which the area of the archivolt at its springing is confined to the width of the top diameter of the column.

But there is something further to be noticed in this capital. The Palace at Spalato is the building in which we find the earliest symptoms of the relaxation of strict Classic rule in Architecture, and the earliest promise of the development of the styles of modern Europe. And in this capital it will be observed that though in general the Corinthian type survives in the bell, the two rows of leaves, and the hollow abacus, the fourth element—the caulicoli—have begun to alter their form; they have lost the central pair of volutes, and are more absorbed in the foliage, which occupies a more important place in the composition than before. Nothing, however, has happened to remedy the weakness of the angles of the abacus, and the load is confined as before to the solid central part. This, of course, only allowed a thin wall above, which in this case does not signify, for the columns only carry a row of arches with an entablature and nothing resting upon it.

It did however signify a good deal, and created a serious difficulty when the great Christian basilicas of the fifth and sixth centuries came to be built. In their case the design required lofty walls for a clerestory to be raised upon the columns, with heavy timber roofs, and the thickness given by the upper diameter of the columns would not have sufficed for the stability of this upper construction. How then were the builders of those days to carry thicker walls securely on the Corinthian capitals which they sometimes rudely imitated, but more often actually pilfered, from ancient buildings?

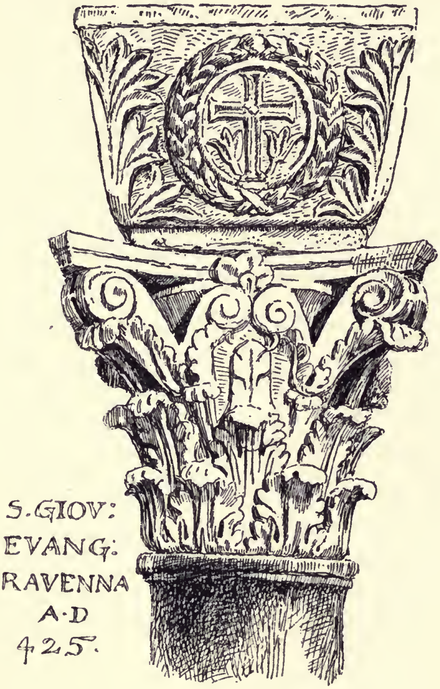

FIG. 3.

The problem was solved in a very simple and original way, if a somewhat audacious one, by the Byzantine and Ravennate architects. They interposed between the abacus and the load a sort of corbel-stone, or impost-block, conforming on its lower bed to the top diameter of the column, and spreading out till the top bed was wide enough to receive the thick wall above. Fig. 3 shows one of these capitals with its impost-block—*pulvino* in Italian, or *dosseret* in French—from the church of S. Giovanni Evangelista at Ravenna, built according to the latest authorities A.D. 425. The Corinthianising capital is rudely cut, for the art of that day had lost in skilful execution what it was already beginning to replace by new youthful vigour and independence of precedent; but it will be seen that it still retains the four features of the old capital, in the abacus, the bell, the leaves in two tiers, and the caulicoli. So far from being ashamed of the *pulvino*, the builders have welcomed it like true artists, and decorated it with sculpture, and so made it into a novel and interesting architectural feature.

The next illustration (Fig. 4) shows by a slight sketch of the nave arcade of S. Apollinare Nuovo at Ravenna, built under the Gothic kings about the year 500 how the impost-block, by widening the area of support, served to carry thicker walls on slighter columns.

The following illustration (Plate I) shows a variety of Byzantine capitals from the beautiful basilican church of Parenzo, in Istria. That marked *g* is a version of the Roman composite capital, and bears on the impost-block the

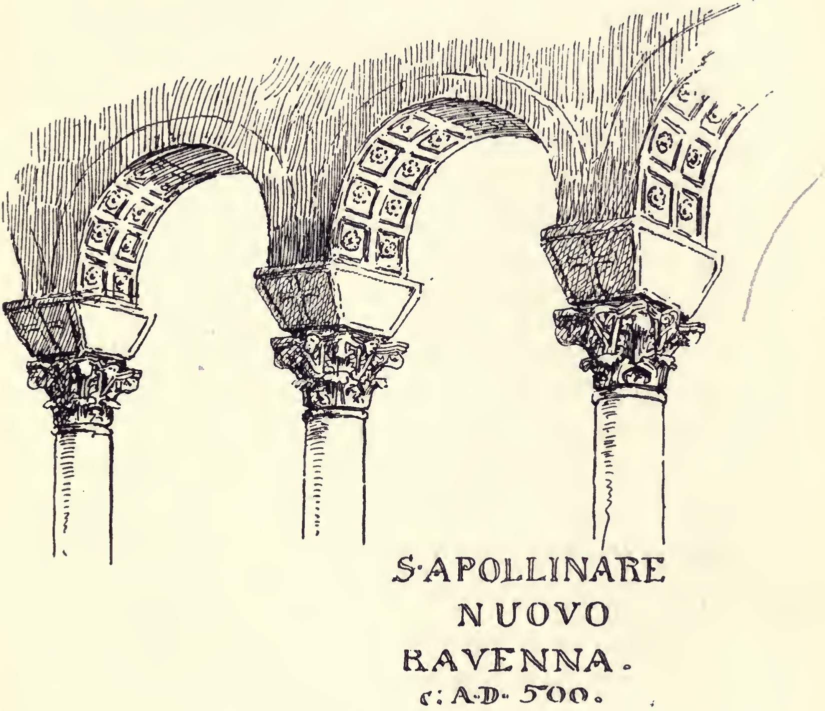

FIG. 4.

monogram of Euphrasius, the bishop who rebuilt the cathedral between 535 and 543. In the others we see a fresh departure. They forsake the Corinthian type entirely, and, like the cushion caps of our own Norman work, become solid spreading blocks, something like the impost-block itself, decorated on their plane surfaces with carved surface ornaments, which are often undercut to form a sort of lace-work veil over the solid core behind. These capitals would have sufficed to carry a thickened wall without any impost-block above them; but, nevertheless, they are all furnished with this supplementary feature, which seems to have become almost a necessary member of the Byzantine colonnade. At Parenzo there is the further reason that these solid capitals are used indiscriminately with others like that marked *g*, and therefore, for uniformity's sake, had to be provided like them with the *pulvino*.

From Ravenna the idea of the *pulvino*, or solid second capital above the capital proper, by which the area of support was extended enough to receive a thicker wall, spread to other parts of Italy, and Signor Rivoira* gives examples of rude Ionic capitals with this addition from the church of S. Stefano Rotondo at Rome, which was either rebuilt or remodelled under Pope Simplicius between 468 and 483, and also from another church of S. Stefano on the Via Latina some twenty years earlier.

Another step towards fresh developments

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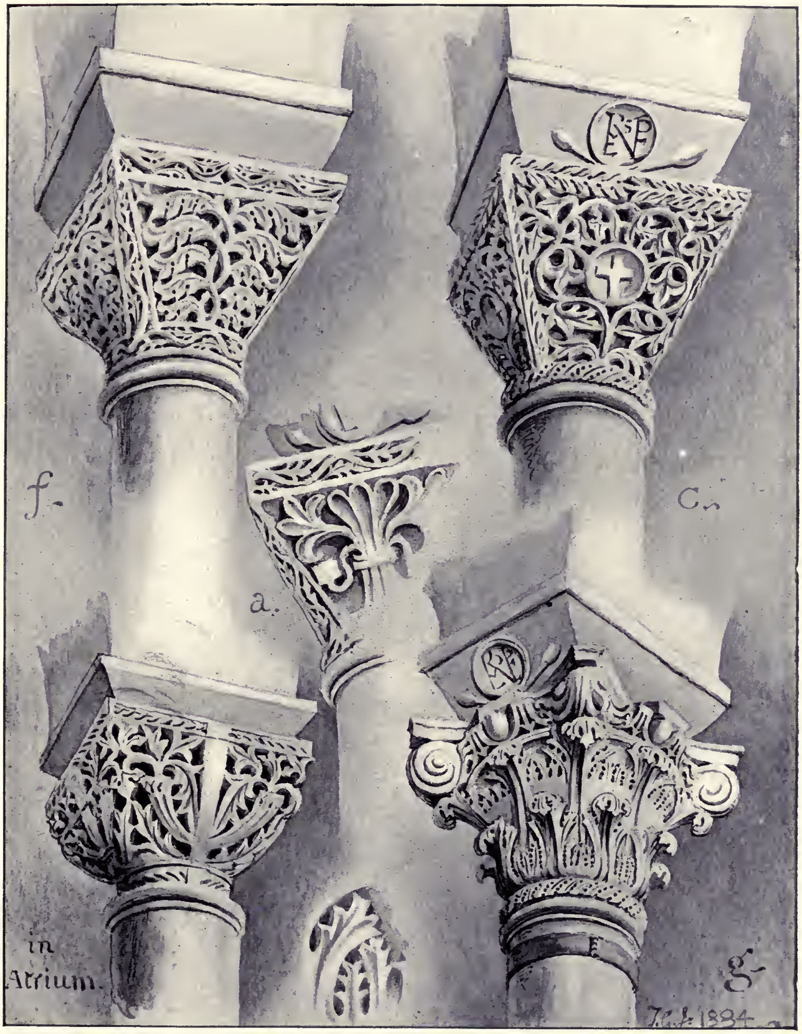
* Rivoira "Le origini dell' Architettura Lombarda," p. 24.

Plate I



PARENZO

To face p. 32

will be detected in the following examples from the Duomo of Trieste. In the ruder of the two (Fig. 5) the main features of the Corinthian capital are preserved, though cut in a somewhat clumsy and artless fashion, and there is a very pronounced *pulvino* or impost-block above. But the other capital (Fig. 6), which seems to betray the touch of a Greek artist, conforms less strictly to the Roman type, and shows a distinctly fresh motive in the impost-block, which, instead of being confined at its base to the diameter of the column, covers the Corinthian abacus, horns

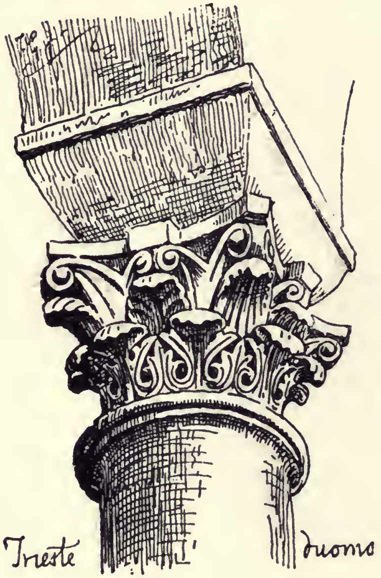


FIG. 5

and all, and then continues to spread out still further.

This is something decidedly new, and a wide step towards new developments ; and it was

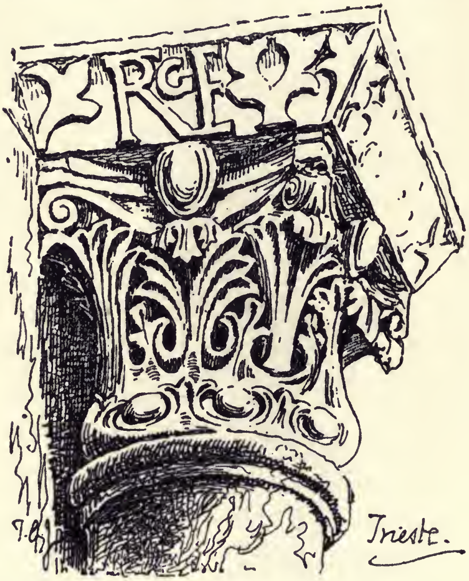


Fig. 6

made possible by the more solid design of the horns of the abacus and of the supporting leaves, which had long since ceased to be cut through behind. The *pulvino* in this example is become almost a part of the capital, instead of being an independent feature on the top of it, and, as it were, a second capital over the first.

This development is carried further still in the next example (Fig. 7), from the vestibule of St. Mark's at Venice, dating between 1050 and 1070. Here the impost-block, or *pulvino*, is actually united to the original capital—Ionic in this case instead of Corinthian—and the joint capital thus formed carries a fresh impost uniting the pair of capitals, and affording a solid base from which the arches may spring.

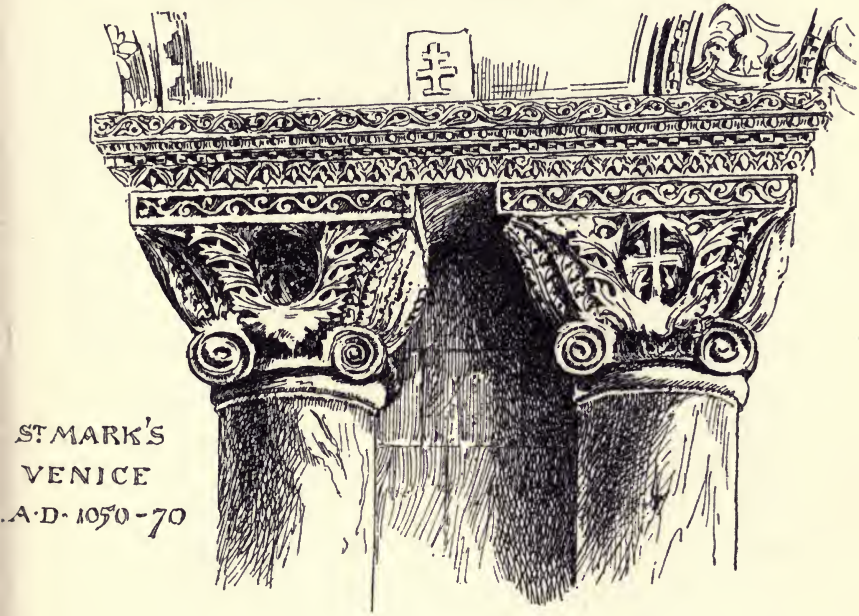
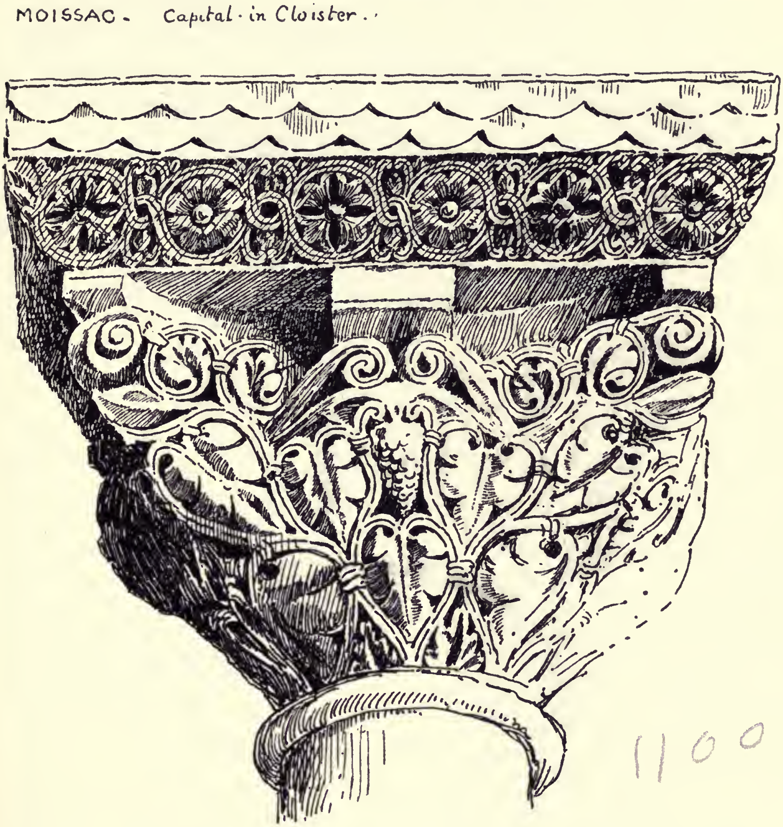


FIG. 7

We have now traced the development of the Byzantine or Ravennate capital out of the pure Roman type, the first step being the addition of the *pulvino* or impost-block, a sort of second capital on the top of the first; and the second, the gradual melting down of this new member into the original capital, till it is either absorbed and lost in it, as at St. Mark's, or becomes a sort of upper abacus as at Trieste, square, and covering the old hollow-sided abacus of the Corinthian order.

We now pass, at a bound, from Italy to the South of France and the fine cloister of Moissac in Guienne. In this capital (Fig. 8), which is dated by an inscription A.D. 1100, you have something like the solid Byzantine capitals at Parenzo (*v.* Plate I.); that is to say, it is simply a tapering block covered with surface ornament. But, nevertheless, it retains traces of its Corinthian parentage. There are rudimentary volutes at the angles; there are the central volutes of the caulicoli, though the caulicoli themselves, from which they should spring, are absent; there is the hollow-sided Corinthian abacus, and in the middle of the hollow a projection starts forward in the place of the rosette; but above all, there is the second abacus of Trieste, now, however, united finally to the capital, and forming an integral part of it, never again to be disunited.

From this time forward this second abacus becomes a necessary part of the capital; it is, in fact, the real abacus, although for a long time


MOISSAC - Capital · in Cloister ..

1100 —

FIG. 8

the old hollow Classic abacus was retained below it—a curious survival, of the meaning and derivation of which I daresay the men of the time had no idea, and about which they did not

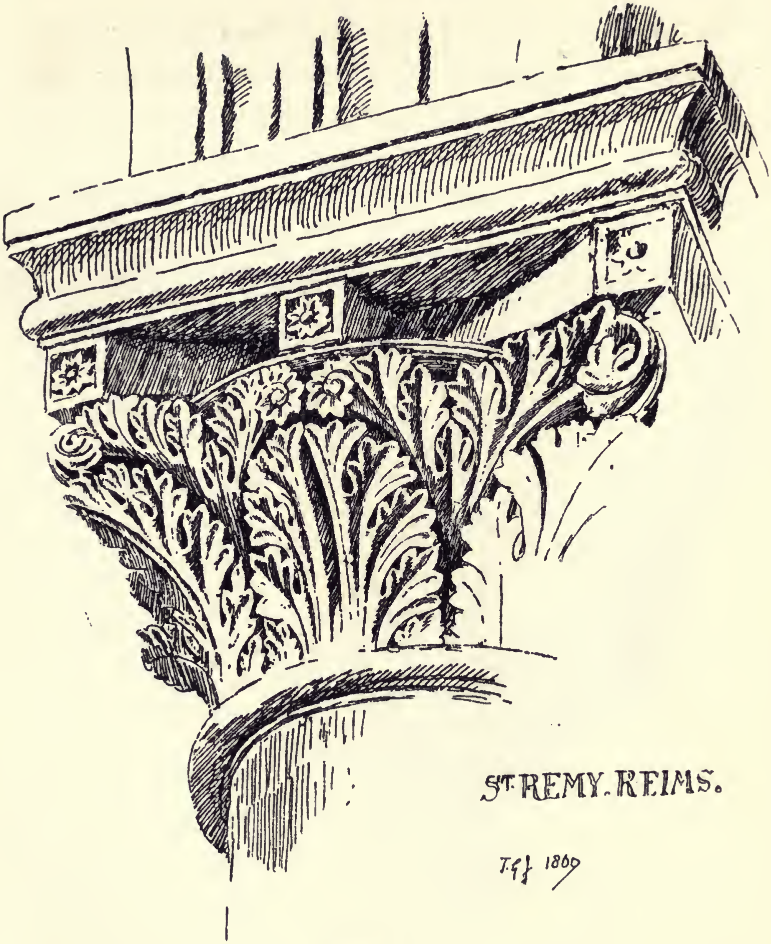
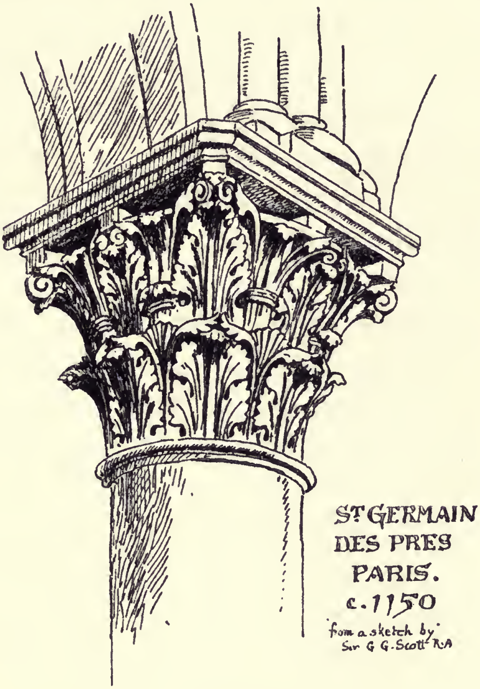


FIG. 9

concern themselves probably any more than we do about the idle buttons our tailors sew on the wristbands and backs of our coats.

Here (Fig. 9) is another instance, taken from the church of St. Remi at Reims, where the new upper abacus has obviously become the real one, while the shadowy survival of the original



ST GERMAIN DES PRES PARIS. c.1150

from a sketch by Sir G G. Scott R.A

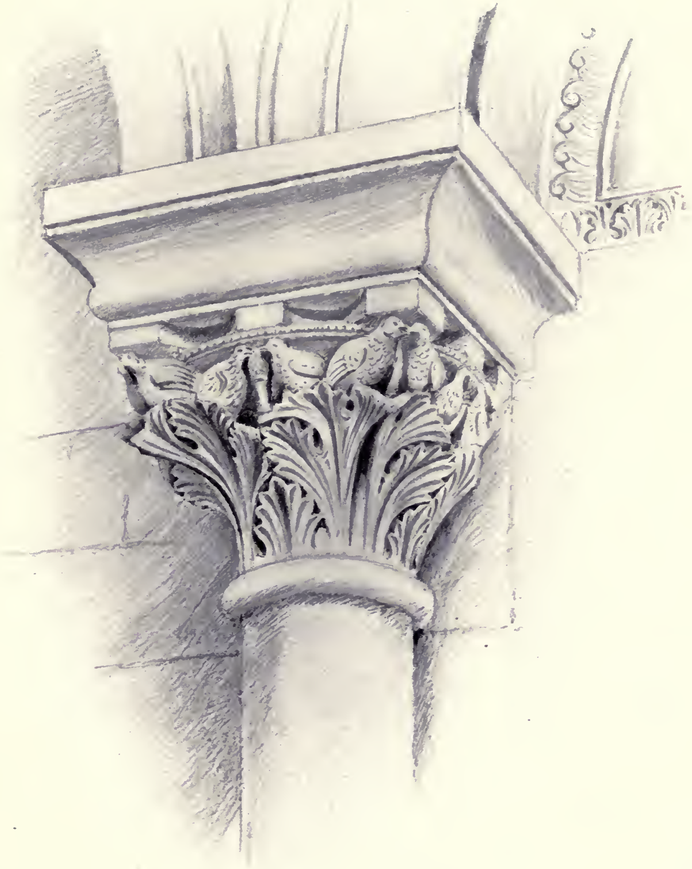
FIG. 10

Classic abacus has become a mere ornament. In this example it is interesting to note that while the constructive scheme of angle and intermediate volutes is respected, and there is even a suggestion of the caulicoli, the volutes are volutes no longer, but have become bunches of leaves turned over into a kind of ball or knob. This, as we shall see, was a step towards fresh developments of ornamentation.

In the fine capital from the Church of S. Germain-des-Pres at Paris (Fig. 10), which dates from about 1150, the Classical tradition is very strongly alive. We have the bell, the angle and intermediate volutes, the two tiers of leaves, and even a Gothic rendering of the caulicoli ; the hollow Corinthian abacus remains, broken out, however, in the middle by a projection representing the rosette, while above it is the new and real abacus, which, now that the capital is strengthened by a more solid construction, is reduced to very moderate dimensions.

Of the same style and period is the next example (Fig. 11) from the Cathedral of Le Mans, where the decoration bestowed on it seems to show that what was left of the old Classic abacus was regarded merely as an ornament, and that its old function was clean forgotten.

In the following example (Plate II.) from the Cathedral of Sens, the hollow abacus is almost the sole surviving element of the Classic capital, and the new or Gothic abacus above is made much more important.



SENS

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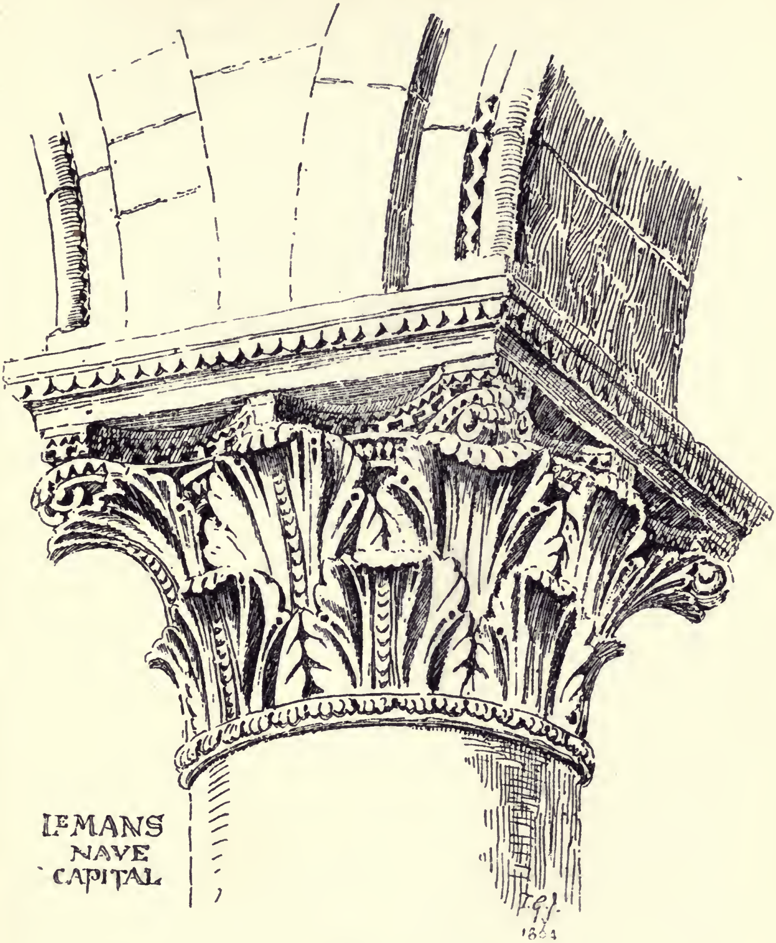


Fig. 11

In the next capital (Fig. 12) from the Duomo of the Island town of Veglia in the Gulf of Quarnero, dating from about 1186, the fusion of the new abacus and the capital is complete, though the old concave Classic abacus is still represented below it, and remains to form the sole link with the Roman original.

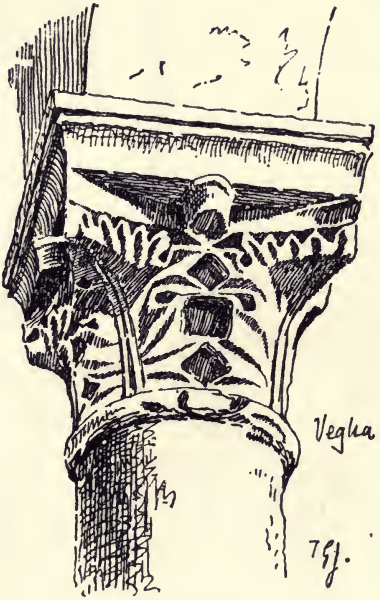
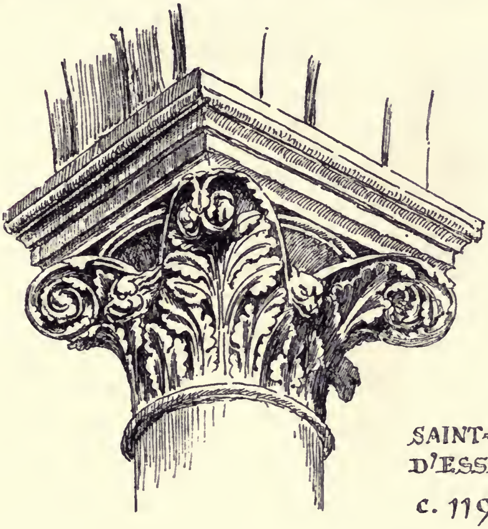


Fig. 12.

The next step is a wide one. There is very little of Classic tradition left in the capital (Fig. 13) from the Abbey Church of St. Leu d'Esserent near Creil in France. The bell is there, and there are horns to represent the volutes, but the concave Corinthian abacus has at last disappeared, and the Gothic abacus alone remains, resting for the first time directly on the bell. The volutes have been developed into knots of foliage, a change foreshadowed at Reims (Fig. 19), and they are now of substance solid enough to give real support to



After V. le Duc

FIG. 13

the four angles of the abacus. Architecture was at this period, at the end of the twelfth century, emerging from the fetters of Roman tradition and advancing rapidly towards a new and progressive style, which attained its full development in the thirteenth century. In the fine springing lines and grand contour of this capital we see evidence of a strong vitality, and of independence and freedom, that raise it to a higher artistic level than the more restrained and conventional Romanesque of the previous centuries.

From this it was easy to pass to the well-known cap-á-crochet, which to say the truth is pretty well hunted to death in French Gothic. A simple example of it is shown by Fig. 14; all traces of Classic origin are lost, except the bell, which shows a curious power of survival.

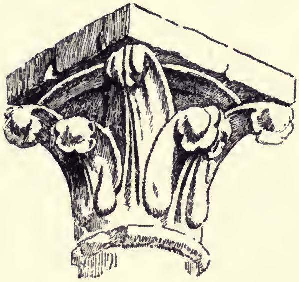


Fig 14

In England, where, for many reasons, Classic tradition never held such a place as it did in France and the Romance countries, we should look in vain for any sequence of developments such as those we have been tracing ont. Here as elsewhere, no doubt, the need was felt of a corbel-capital, that is to say of a capital with a solid upward spread, to afford a larger area of support than that given by the top of the column. But in England and Normandy and in Germany also this end was reached directly without any of those tentative steps which we have followed up in the south and centre of France. At A is the plan of the shaft (Fig. 15);

at B B B B the plan of the square impost or load to be carried, in fact the plan of the springing of the arches. Imagine an inverted and truncated cone placed on the top of the column and spreading upwards as shown by C in the plan and by the sketch E. It is obvious that the four segments D D D D are useless, and we can cut them off vertically, an operation which gives us the capital shown at F. Add to this an abacus to mark the springing of the arches, and a necking to distinguish it from the shaft, and now in G we have the familiar Norman cushion capital. The abacus and necking, it will be observed, are added for æsthetic reasons only, not, as in the case of the Byzantine *pulvino*, for strength; the cushion capital would have done its work just as well without them.

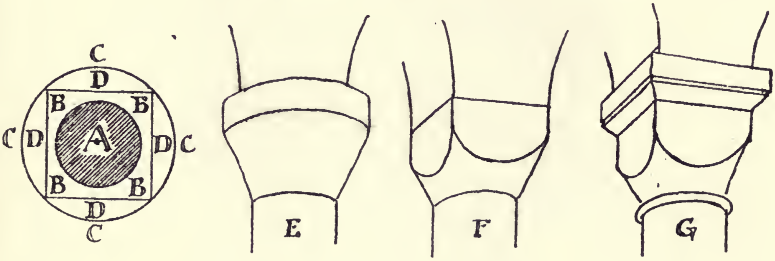


FIG. 15

But these simple and rude capitals did not long satisfy our ancestors, and foliated capitals were also used, sparingly at first, and very coarsely executed, but gradually increasing in refinement and beauty. In the capitals of the Eastern part of the choir at Canterbury, the work of English William in 1181, we cannot fail to see French influence. William of Sens, the architect who preceded him, very possibly left French carvers behind him, or if not he seems to have impressed the French style on the carvers who were employed, whether

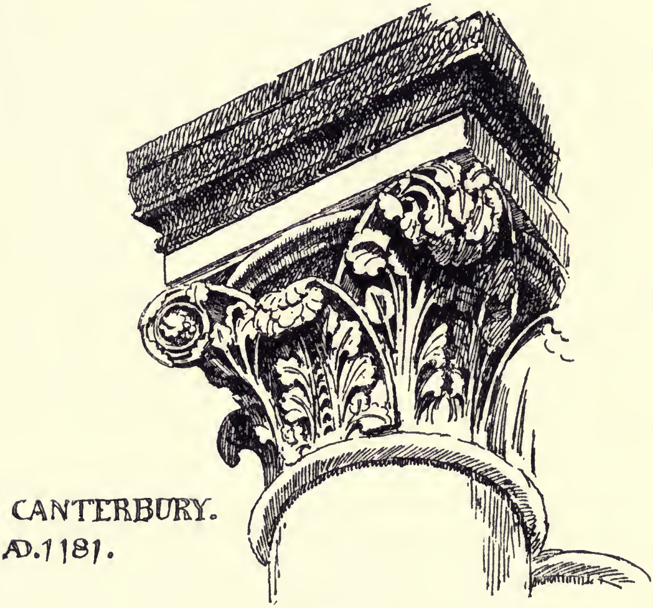


Fig. 16

English or French. This capital (Fig. 16) is in some points very like that at S. Leu d'Esserent (Fig. 14), though there are certain differences which lead to the belief that it was cut by English artists working under French direction.

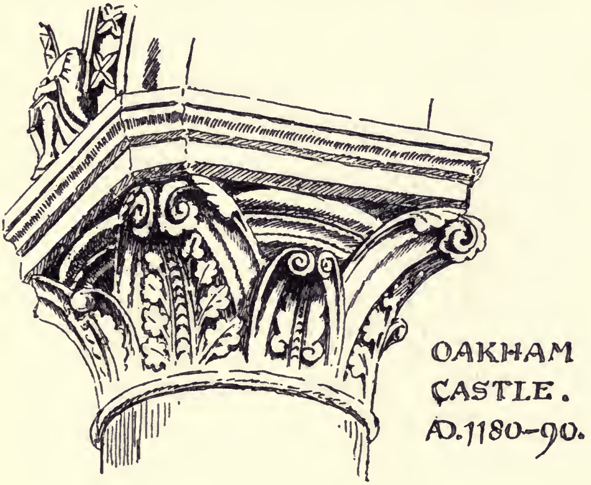


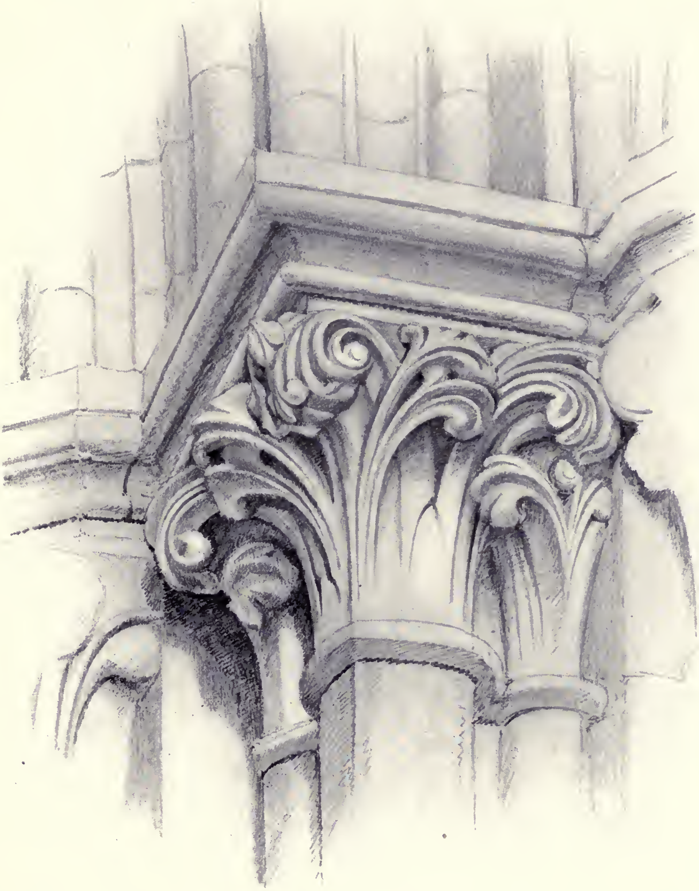
FIG. 17

The capital at Oakham Castle (Fig. 17) is very like those at Canterbury, but a little less French in style. In both cases we have the bell, and the square abacus supported by strong volutes at the corners.

The magnificent capital from Wells Cathedral shown in Plate III. dates from the episcopate of Bishop Jocelyn, 1206–1242, and is more thoroughly English, though the square abacus at that date had become unusual in this country. It will be observed that the bell has quite disappeared, but the knots of foliage at the corners still preserve the memory of the volutes.

The English preference for a round abacus, however, of which there are examples as early as Edward the Confessor's work in the vaults under the monks' dormitory at Westminster, was in itself subversive of Classic influence. It left no angles to be supported by volutes, no bell because the whole capital was a bell, and the Corinthian arrangement of leaves was impossible. Here (Fig. 18) is an example of the thoroughly developed English decorated capital from the choir aisle at Lincoln, dating from about 1260. In this there is nothing left to raise suspicion of a Classic origin : the new Art has finally emerged from leading strings, and goes its own way without parental guidance.

The final example of a capital that is given in Plate IV. belongs to the vestibule of the Chapter House at Southwell Minster, and dates from 1294. In this, of course, there is no trace whatever of Classic tradition, and it therefore falls really outside the present subject. It is given here merely to show how rapidly the



WELLS

To face p. 48

Gothic Art progressed when it had thoroughly emancipated itself. The conventional foliage of Early English work has given way to natural leaves and flowers, imitated so admirably from life that a cast of these Southwell capitals looks almost as if it were taken from real vegetation ; and yet it is designed and carved with so true a sense of the limitations of art that it has none of the weakness that distresses us in much modern carving of natural foliage, but retains the strength and air of support proper to a

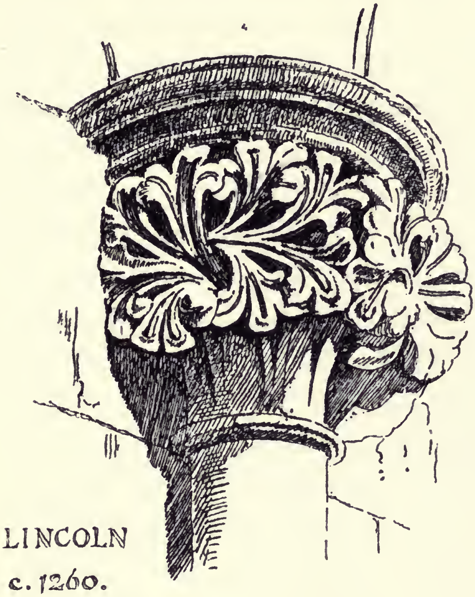
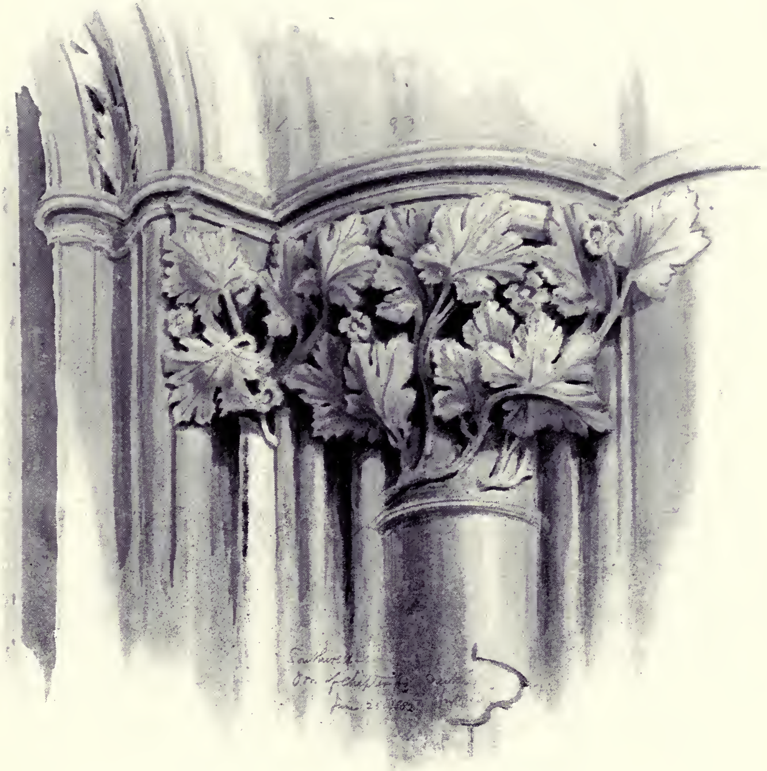


FIG. 18

working member of the Architecture. In the whole range of Gothic carving I know nothing more charming than these exquisite capitals.

This has been but a rapid sketch of the development of one architectural feature from its origin in Ancient Art to its perfect emancipation in the thirteenth and subsequent centuries. It will, however, serve its purpose by showing that so far from the successive changes it underwent being the result of pure fancy, and mere imaginative design, they are based on reason, and partly necessitated, partly suggested, by constructive difficulties. The lofty superstructure of the Early Christian Basilica demanded thicker walls on the old Classic columns. The columns therefore needed solid and widespreading capitals. The old Corinthian abacus was insufficient, and so the impost-block, or *pulvino*, was devised as an upper capital with a larger top bed, affording a greater area of support. And then, as the Corinthian type gained in solidity, becoming less delicately worked, and with its horns left in the solid instead of being pierced and undercut, the heavy upper abacus gradually sank down and became united to the lower, until at last it was absorbed in it, and from being a second or upper capital, became a second or upper abacus, below which



SOUTHWELL

To face p. 50

the rudiments of the old Classic abacus lingered for a time as an ornament, and then finally disappeared, and so the transformation was complete. During this development there was ample room for the play of artistic fancy—in the conversion of the volutes into bunches of leaves, in the introduction of birds and beasts among the foliage, in the novel arrangement of the leaves, in the decoration of the abacus, and so on, all which depended on the lively imagination of the artist. But the great lesson that I would draw from it is this—that there ran through all these changes a *reason*, and that reason was the development of the constructive idea, rationally carried out, and forming the real motive by which they were primarily inspired. In this we see an example of what I have called the *Reasonableness* of Architecture.

CHAPTER III

SUBORDINATION OF ORDERS

THE history of the capital affords an instance of rational architectural growth on a comparatively small and confined scale, and therefore more easily observed. For that reason it has been taken first. The next example will be of a more important kind, involving greater constructive changes, and greater corresponding influence on the progress and formation of the styles of contemporary Art.

If we take our stand under some one of the splendid Gothic portals of a French Cathedral—portals that have not only no rival, but no parallel in England, for the doorways of our Cathedral fronts do not seem ever to have inspired our architects to do great things—and as we view the statues that flank the entrance on either hand, and look up at the rich imagery that over-arches us in tier within tier of glorious sculpture, we shall find that the effect depends mainly on the plan receding step by step, which produces that fine and impressive alternation of cavernous shade and brilliant relief. This is an effect unknown to Classic Architecture, where the arches are all flush with the face of the wall, and the openings are cut square through it. The great west front of Bourges Cathedral has no fewer than five of these majestic portals, richly charged with sculpture in arch and tympanum, and still retaining some of the statues that flanked the splayed and receding jambs. At Paris, Chartres, Reims, Amiens and countless other great churches throughout France are similar portals, which must always rank among the most brilliant triumphs of Gothic Art; and the ordinary observer will not fail to pay a well-deserved tribute of admiration to the style that invented them.

But were they ever invented? Certainly not, if by invention it is intended that some man conceived afresh in his brain the whole idea of the French portal, complete and perfect, and carried it out into actual work as we see it. So far from coming into being at one act of invention, it was like every other feature of Gothic Architecture, the result of slow development, and of many tentative steps. That grand cavernous recessing, in particular, which so greatly impresses us, with its ring within ring of graded sculpture, had its origin in an idea which can hardly be called artistic at all, but was rather the suggestion of poverty and economy. Paradoxical though this may seem at first sight, it is none the less true, and that it is true will become clear if we trace from its origin the development of one simple principle of Romanesque and Gothic construction on which all these great designs are based.

Starting, as we did in the case of the capital, from Roman Architecture, which it need scarcely be said was the only model the men of the Dark and Early Middle Ages had to follow, we are met by the fact that all Roman masonry was constructed with large stones. Wherever we come across it there is no mistaking the handiwork of the Masters of the World—their massive construction with huge stones that seem to set time at defiance. But this magnificent work is possible only for those who have wealth and command of unlimited labour, and who have ample engineering appliances and skilful artisans. To the builders of the ninth and tenth centuries all these conditions were wanting. Their labourers were few, their means slender, their skill was slight, and their mechanical resources were deficient. How were they to achieve a building *more*

Romanorum, which it was always their ambition to accomplish?* Had they been good enough masons to work these great stones they would have been puzzled to raise and set them. They wanted some way of building which only demanded small stones, such as could be carried up the ladder on a man's back, or hoisted with the very simple tackle at their disposal, and consequently the Roman method was clearly beyond them, and some other had to be devised.

What they did devise was this: In Fig. 19 (1) is shown a Roman arch, with its construction of great stones. In Fig. 19 (2) is an arch of Romanesque construction with small stones. Two rings of arch stones occupy the depth of the single ring of the Roman arch, and a further economy is effected by not making the inner ring so wide as the outer, but setting it a little way inwards. The outer ring, so supported, can now be made in two stones, which need not even meet in the middle of the wall, and the outer moulding or label can be worked in a separate ring of small stones. All these stones are of small dimensions, easy to handle, and they may be of irregular sizes. All that is wanted further to ensure sound construction is that the joints in the different rings should break bond properly, or, in other words, alternate with those in the next ring above or below them.

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* Benedictus . . . cæmentarios qui lapideam sibi ecclesiam, juxta Romanorum quem semper amabat morem, facerent postulavit, &c.—Bedæ. Opusc. Hist.

This plan had another advantage, which at that time was of greater importance than one might imagine, in economising the wooden centring on which arches are constructed. For centring had, even in Roman times, been expensive and difficult, and many devices may be found in Roman domes which seem to be contrivances for reducing the need of it. In the post-Roman age, incomparably less well provided with materials and appliances, this difficulty was of still greater importance; and this plan of reducing the inner ring of the arch in width and depth enabled the builders to set it on comparatively slight centring, while the ring once set served by itself as a centre for the outer rings that were bedded on the back of it.

But the effect of this new principle of construction is not confined to the arch: it affects the pier on which the arch rests. The recessed arch in Fig. 19 (2) would no longer fit the plain square pier in Fig. 19 (1), but demands a reveal or recess to be continued down the pier from that in the arch above, as shown in Fig. 19 (2).

Roman

Romanesque

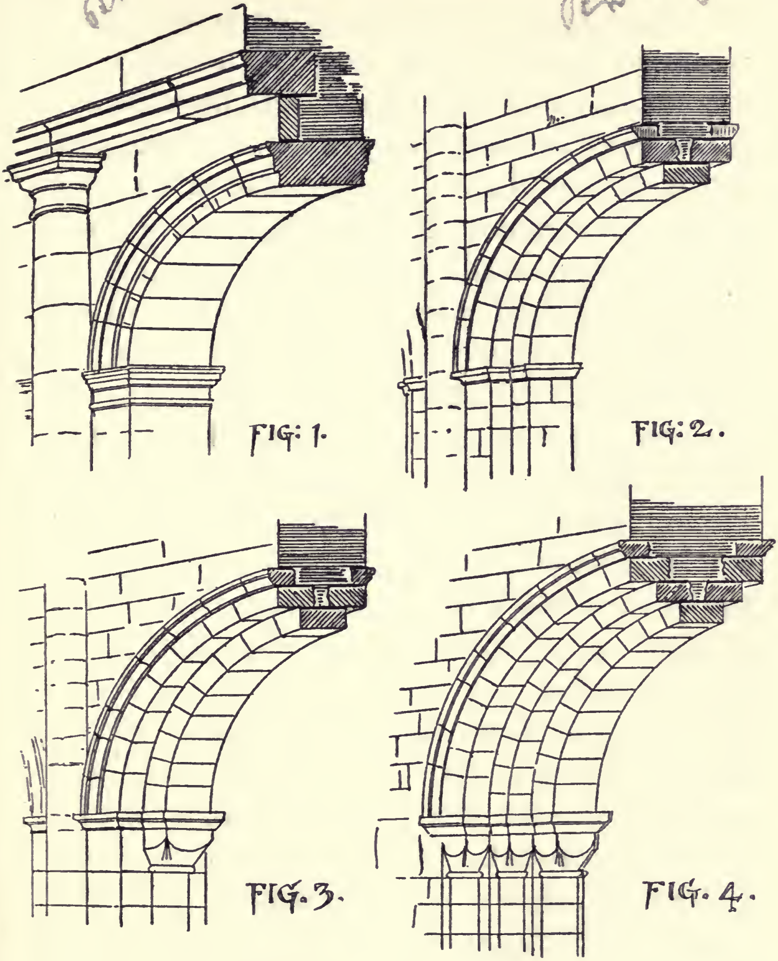


Fig. 19

The change thus effected in arch and pier, simple enough in its origin, was really a momentous one, and led to results far beyond its first apparent bearing. The new mode of construction was not only a novelty, but amounted to a revolution in Architecture. It introduced in fact the principle of the *subordination of orders*, which is one of the most important elements of subsequent styles, both Romanesque and Gothic. These rings or *orders* play their part in every feature of the design, from the time of their invention onwards; in the arcades, the doorways, the windows, and the decorative panelling. Once firmly established, they invited the artist to make of them an element of beauty, and he was not slow to avail himself of the opportunity they afforded. In Fig. 19 (3) the dulness of Fig. 19 (2) where the section of the arch travels unchanged down the jamb—as, for instance, it does in the earlier work of St. Alban's Abbey—is relieved by working the inner member of the jamb into a shaft with a spreading capital. These shafts can of course be multiplied, for the number of orders or rings can be increased if necessary, as in Fig. 19 (4), where there are three orders besides the label or hood-moulding, and where in the jamb each of the three corresponding members is turned into a shaft with its proper capital. This correspondence of course is essential: each order in the arch must have its own supporting member in the pier; unless when, as is sometimes done, the whole arch of several orders is carried by a single cylindrical column, as at Durham and Peterborough or Norwich. There, however, the Norman capitals are sometimes broken under each order, though they rest on a single cylindrical pier instead of on a group of distinct shafts.

In the next Figure, 20 (A), it will be seen how the orders of the archivolt began to be decorated. Their square edges may be worked into simple mouldings, a roll and hollow, and the label may be adorned with billets or roundels. The inner order, if too wide for one shaft, may be carried by a pair, side by side. A further development is shown in Fig. 20 (B), which led to still greater novelties in the future. Instead of the inner order being worked with a flat soffit or underside, like the preceding examples, it has on its underside a bold roll moulding. This, which would have been impossible in piers and arches of the Roman type, followed on a change effected in the plan of the piers by the new system of subordinated and concentric orders. Preceding examples have shown how the pier followed the changes in the arch, and was broken into as many members as there were

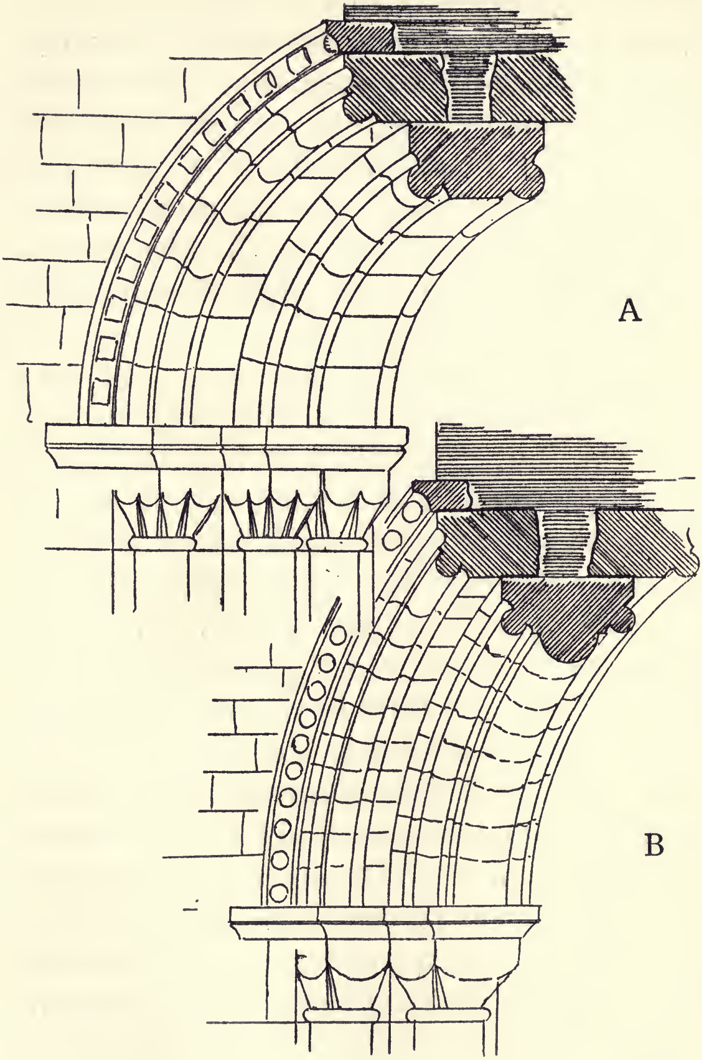


Fig. 20

orders in the archivolt. In Fig. **21**, at *a*, is part of a row of Roman piers and arches. The pier is a simple square, with the sides parallel to the direction of the wall, which is shown by dotted lines. At *b* is part of an arcade in the early stage of the development of orders, as, for instance, at St. Albans, where the section of the arch is carried unbroken down the pier. At *c* is part of an arcade where the pier is formed into a group or cluster of attached shafts, each carrying its own order in the arch. And now it will be seen that the pier has changed direction; from being set square with the wall, as at *a*, it

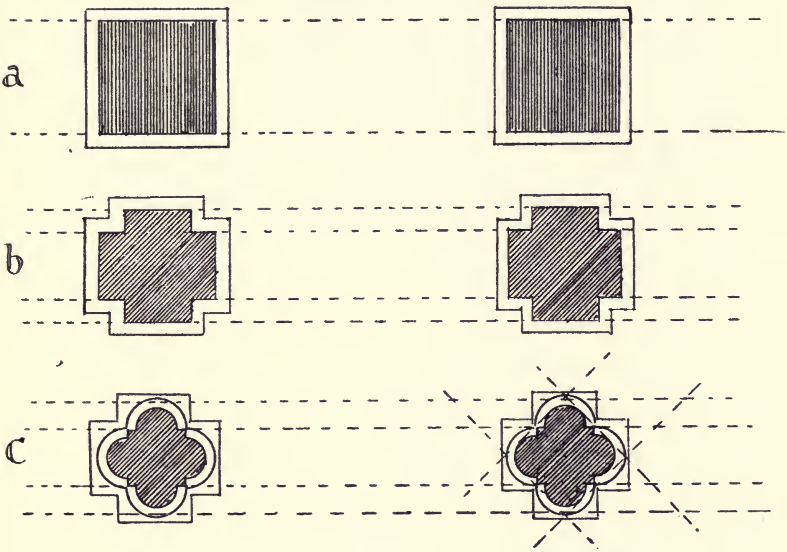
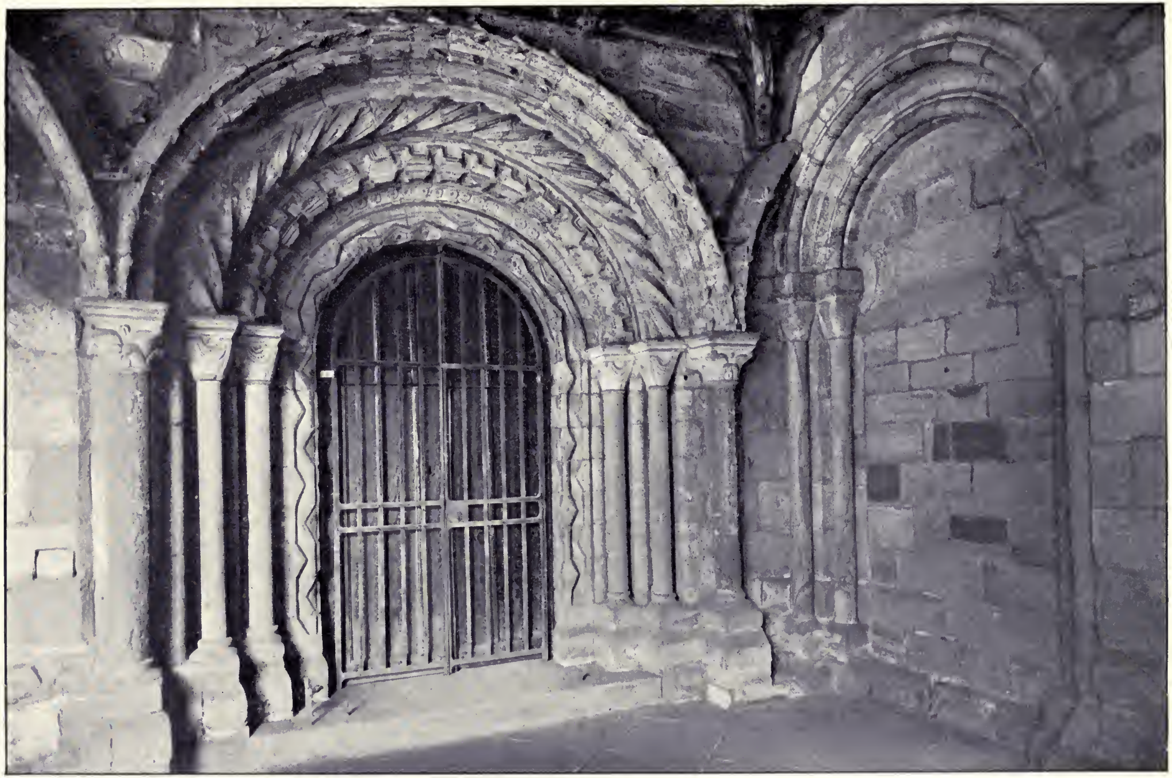


FIG. 21.

is now set obliquely, and has become a diamond, as the figure shows by dotted lines. And it remained a diamond in plan all through the Gothic period; a fact which it is important to remember in following the further development of the style. In the same way the section of the arch assumed an oblique or diamond-like plan, as may be seen by the Fig. 20 (B), where the plan of the arch-mouldings falls within the line of the diamond, and the pier below, of course, follows the same direction.

The application of this principle of construction by orders is exemplified in a simple form, and in an early stage of development, by the arches from the cloister at Durham, illustrated in Plate V. To the right is an arch of two orders, each decorated in the simplest way by a plain roll moulding on the edge. Each order has its own shaft and capital in the jamb below. The doorway to the left shows the system of subordinated orders carried somewhat further. There are here four orders in successive rings receding regularly from the front, and on them the Norman architect has lavished all the resources of his skill in the conventional ornaments of the time—zigzag, fret, cable, rosette, and others which it is difficult to describe by a single word. The capitals are some of them of

Plate V



THE CLOISTERS—DURHAM

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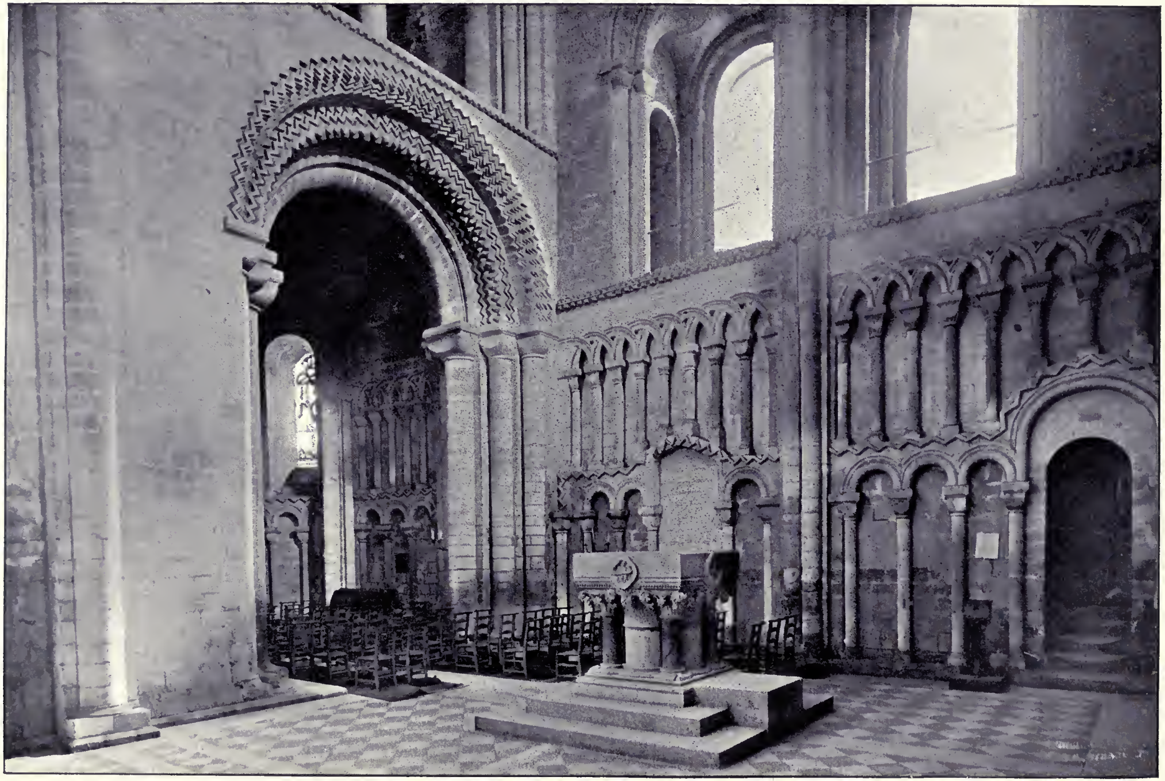


ELY—THE WESTERN TRANSEPT

To face p. 63

the solid cushion type, others with strong, vigorous foliage, severely conventionalised to express support, which is, of course, what a capital should express. It should be noticed, also, that the shafts are no longer attached—that is, shaped out of the solid jamb stones, as in the preceding illustrations, but are detached, and stand in nooks or reveals of the jamb. This is a novelty, and it soon led to the use of a different material for the shafts, and in the subsequent period they were often made of native marble, generally Purbeck, for England is not rich in coloured marbles, and there was little room for choice.

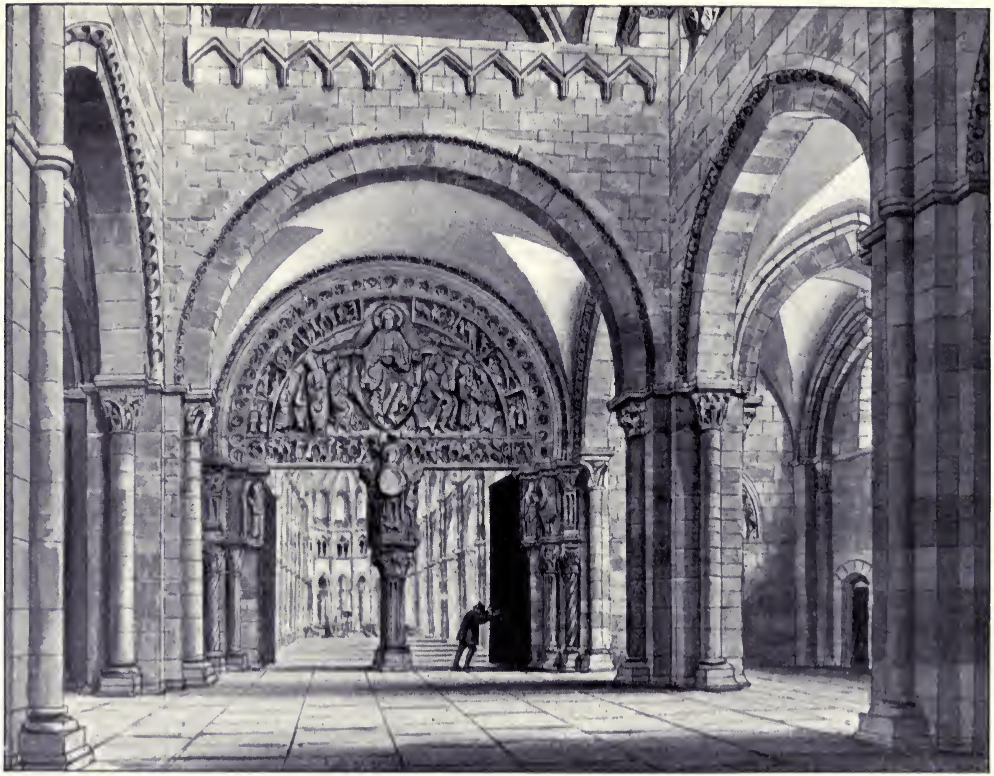
In the next example (Plate VI.), from the south-west transept of Ely Cathedral, the arch leading to St. Catherine's Chapel shows the construction by orders very plainly. The two outer rings or orders are decorated by zigzags, and the inner one by mouldings, with a large roll in the middle of the soffit, which brings the whole group to the diamond plan just explained, the same plan being followed in the jamb, which, in this case, has the shafts attached.

The succession of orders enclosing a sculptured tympanum is shown in the great west portals of the famous abbey church of Vezelay in Burgundy (Plate VII.), a building full of lessons in Architecture, and, even according to M. Viollet-le-Duc, the cradle of Pointed Architecture in France.

The fine doorway of Rochester Cathedral (Plate VIII.) has something of a French look in the sculpture of Our Lord between the Evangelistic emblems in the tympanum and the figures of the king and queen—Henry I. and his Queen, or Solomon and the Queen of Sheba, as the case may be—attenuated and placed columnar-wise in the jambs. There are four orders here besides the inner member which carries the tympanum.

In these and other early examples it should be noticed how the squareness of the order with which the whole system began is observed. As with many other features in Architecture the origin of the order and the history of its development were in time lost sight of. The orders began at first, it will be remembered, as rings of stone with square edges, receding in regular square steps one behind or within the other. Next the edges were rounded off into rolls (Fig. 20), and then into mouldings divided by hollows, or else carved into various ornaments as at Durham (Plate V.), or Rochester (Plate VIII.), which by softening off the sharp edge, to some extent obliterated the old

Plate VII



VEZELAY—THE WEST DOOR

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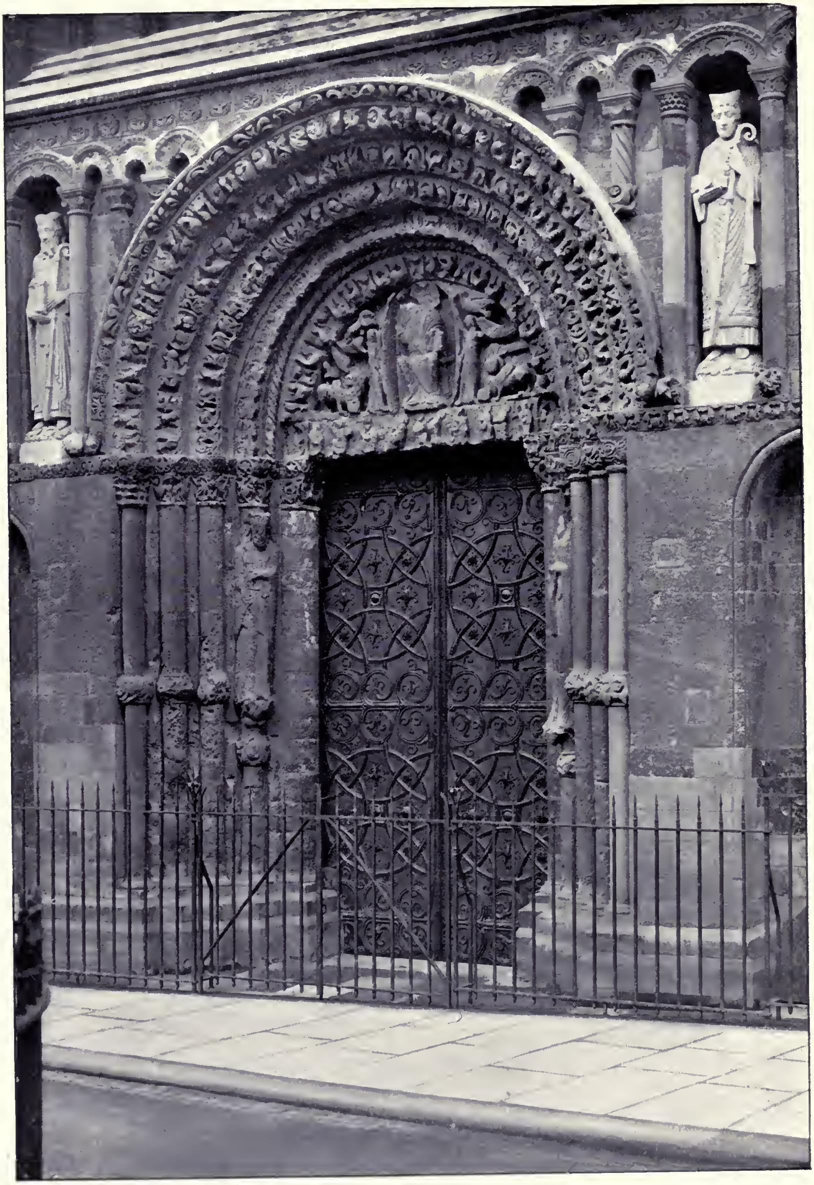

ROCHESTER—THE WEST DOOR

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square profile. But in all good Romanesque and Early Decorated work the fact was never forgotten that the arch was made of a succession of rings of stone inside one another, and receding in order each behind that above it; and something was retained of that old squareness which indeed seemed demanded by the construction. So long as the square abacus continued this squareness of the order was emphasised by it. But even when the square abacus was abandoned by the English architects for the round one, the squareness of the order continued to be respected, and it can be detected in the decorated work of the thirteenth and fourteenth centuries in spite of the multiplication of mouldings in which our ancestors delighted.

Here, for instance (Fig. 22), is an example from All Saints' Church at Stamford, of a decorated column and arch. The mouldings are very elaborate, consisting of rolls with nosings, large and small, divided by deep hollow channels, so that all the exposed part of the stone ring is worked into details, and yet the squareness proper to the order is not forgotten. The nosing of the outer order comes to the angle of the square, and the upper members of the inner order come to the square face line. The result is that the mouldings fall into

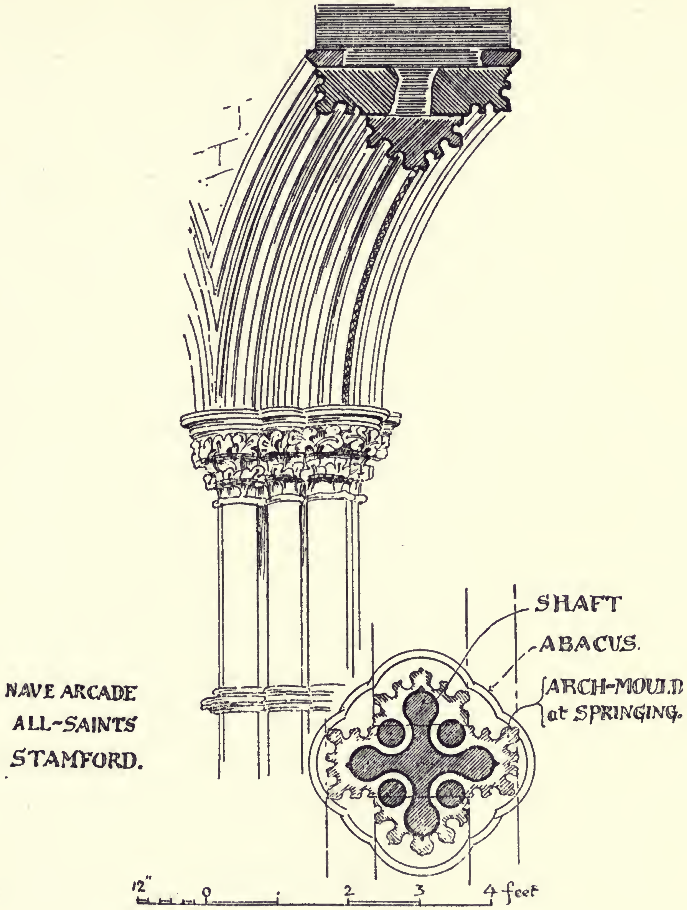
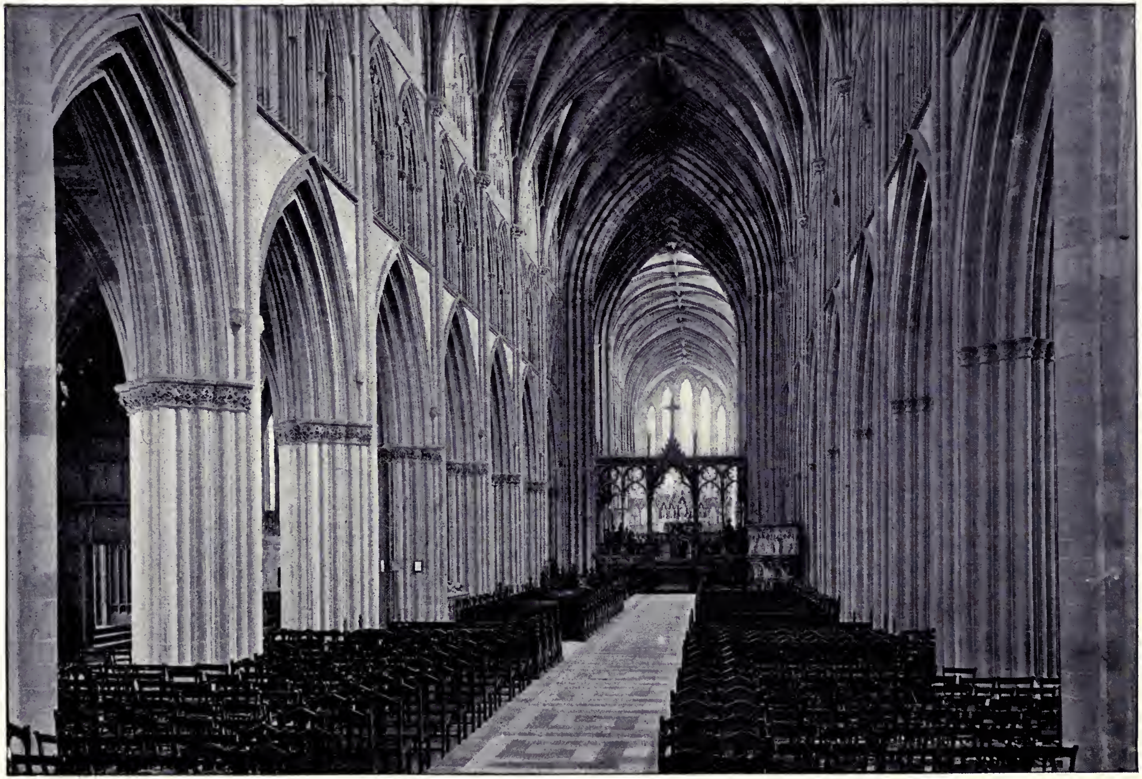


Fig. 22.

groups distinguishable by the broad shadow thrown by the outer order upon the inner, and so display an orderly organic structure of parts, instead of being a mere assemblage of ribs and



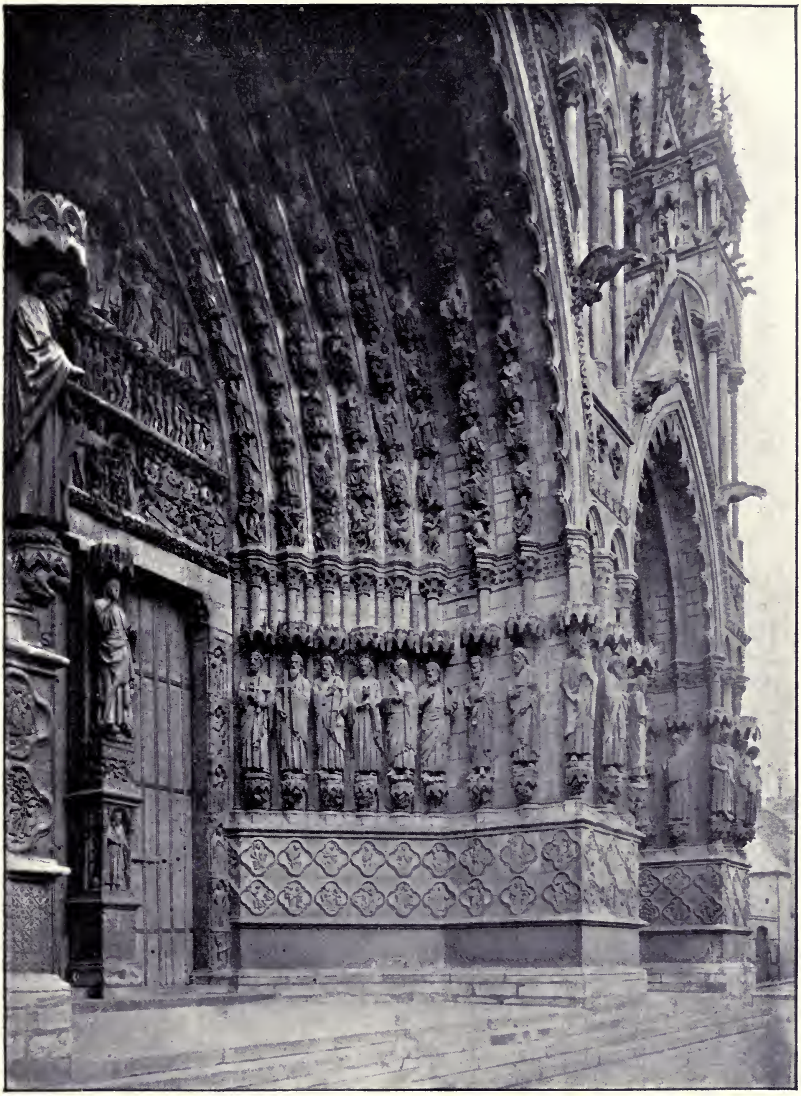
WORCESTER CATHEDRAL—THE NAVE

hollows with no system in them at all, as in fact they sometimes are in the later Gothic styles where the squareness proper to the order came to be forgotten.

The meaning of this will be made still clearer by the view (Plate IX.) of the interior of Worcester Cathedral. Here we have in the great arcade of the nave a very elaborately moulded design, thoroughly English in character, for the elaboration of mouldings is one peculiar characteristic of English Gothic. The French mouldings, on the contrary, are comparatively poor and show little variety;* though their shortcoming is atoned for by the more lavish use of positive sculpture. But in spite of the multiplication of mouldings in these Worcester arches, and in spite of the round abacus from which they spring, the squareness of the order is well preserved. Each order casts its own distinct shadow, and the mouldings are divided in distinct groups, order by order, corresponding to their construction, by ring within ring. And thereby they fulfil the great fundamental rule of good Architecture, which requires that the design should express the construction and be derived from it.

* This is very noticeable in the aisle and clerestory windows of Notre Dame in Paris, which are so slightly recessed and so sparingly moulded as to give an effect of thinness and poverty to the wall.

This brings us round again to the great French portals with which we began this chapter. In Plate X. we have one of these great doorways at Amiens Cathedral which almost overpower one with their prodigality of sculpture. To the eye of the ordinary observer they may seem only great caverns of masonry, encrusted with precious imagery in somewhat wild profusion, and a kind of orderly disorder. But those who have followed step by step the process of development by which this result was reached will see readily enough through the apparent confusion, and recognise the constructive idea which underlies the design and makes it intelligible. Every one of these tiers or rings of niches and figures that soar above us in the sweep of those mighty arches is an order, such as we have seen in its simple early stage (Fig. 19), and have watched as it gradually adorned itself with mouldings and various sorts of sculpture, till it reached its final crowning phase of splendour in the great portals of Amiens, Reims and Paris. The ornament does not wander at will all over the arched surface, but follows exactly the constructive lines, each tier of niche and figure being carved on its own order and confined strictly to that. Most likely it was actually



AMIENS—THE PORTALS

To face p. 68

carved before the order was built in its place—each piece of sculpture on its own stone, which was then set like any other arch-stone till the whole was firmly keyed together.

The same system is carried consistently down into the jambs, or perhaps it would be more correct to say is confessed there; for though the columns which in earlier examples—for instance, at Durham (Plate V.)—would have stood each under its own order in the archivolt, are here replaced by statues under canopies and supported on pedestals, each statue occupies the position of a column, and corresponds with the order above. The construction, in short, rules the design in these highly developed examples no less than in the comparatively rude and unadorned works in which its influence is more obvious at first sight.

We can thus justify the apparent paradox with which we started, that these splendid works, among the most gorgeous and ornate productions of Gothic art, are based upon a method of construction that had its origin in the pinch of poverty and the need of economy. It was devised as a mode of attaining with humble appliances and small materials something of the effect of the old Classic works, to imitate which was the ambition and the despair of the men of the eighth and ninth centuries, and those that immediately followed. They failed in their endeavour, but out of their failure came something much better than what they had intended. Being born artists, the very difficulties they met spurred their invention and led them by making the best of the materials at their disposal to construct not only well but beautifully. For fitness is the prime condition of excellence in Architecture, and is in itself the first element of beauty. Sound construction and proper use of material are the basis of all true architectural form, of which the highest glory is to express and illustrate it. From an inartistic people difficulties of construction and poverty of material would only have resulted in work that was poor and mean. In the hands of men within whose bosom the divine flame of Art was alight they were the direct cause of the development of a style that was not only new but in no sense inferior, and in some even superior to the old Roman Art out of which it sprang. It is thus that true Architecture is always developed on the lines of reasonableness.

CHAPTER IV

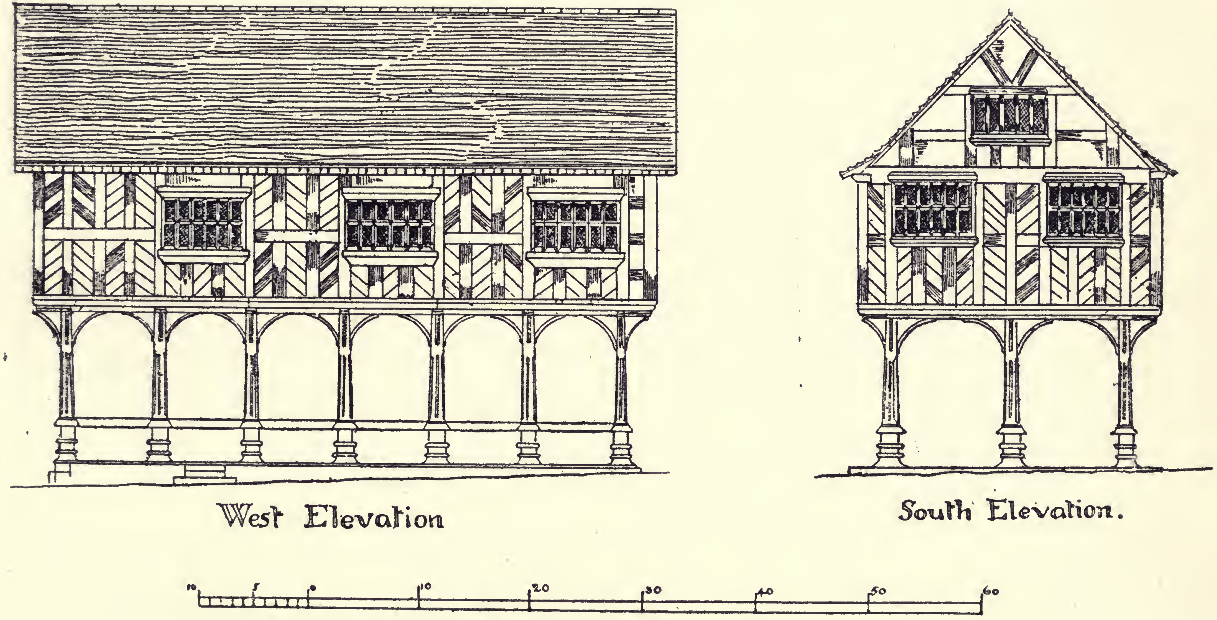
CONSTRUCTIVE BASIS OF ARCHITECTURE

If this reasonable basis on which good Architecture is founded were better understood by those who are lovers of the art, but have had no special training in its principles, I venture to say they would derive a new pleasure from it, which would more than double the old. At first sight, perhaps, the subject may not seem inviting, and, indeed, most people for that reason give up the attempt to understand Architecture as a matter too technical and abstruse for the unlearned, and are content to admire it ignorantly. And yet there is no great mystery about it after all, so far at least as those simpler constructional problems go which are all that it is needful for the amateur to understand in order to trace their effect on the outward development of style. Beyond these elementary problems no doubt lie others that will tax the constructive genius of the architect to the utmost, but it is not necessary for any except the professed architect to ascend so high. The elementary principles of good construction are familiar to all, and whether they know it or not every one is in the habit of applying them, from the child playing with his box of bricks or building his house of cards to his elders who have watched houses and churches rise, and bricklayers and carpenters at their work, and whose estimate of a building is based on its being well or badly put together. Slight construction and thin walls please nobody; but an air of substantial solidity appeals at once to the judgment of the most ignorant and gives pleasure. A plain wall well built of good honest brick or solid masonry is an object on which the eye rests with satisfaction, simply because it is well constructed. If it is buttressed we rank it a degree higher; the buttress, which is a constructive feature, invests it with a new interest; it introduces the element of design; we see the reason of it, we are pleased to trace the thought that suggested it, and satisfied with the additional strength it gives both in appearance and reality. Consciously or unconsciously the constructive test is the one that we all apply and by which we judge, at all events, the simpler kinds of building.

For this reason there are few more satisfactory buildings in modern Architecture than the bridges and viaducts and other utilitarian structures of railway engineers, when their authors are not betrayed by a dangerous ambition into feats of misplaced ornamentation. Like the aqueducts of the Campagna or the Pont du Gard in Provence these works have a simple unaffected dignity, arising from sensible construction, well expressed and exactly adapted to its purpose. The end of the Great Northern Station at King's Cross, with its two huge arches of plain brickwork, would be one of the finest things done in modern times were the central turret a little better proportioned. And its effect—it may be well to notice, apropos of the subject we have just done with—depends for its sole decorative motive on the recession and subordination of the brick rings or orders of which the arches are composed. Even the railway bridge over the Thames at Charing Cross, though no one would call it beautiful—a mere system of lattice girders laid from pier to pier—railway engineering in its simplest form—has about it a common sense and a practical air which raises it above many of its neighbours that make more pretension ; and it is by no means the ugliest bridge between London and Westminster. And if we turn to the other bridges of the Middle Ages which happily still abound throughout England, though nothing can be simpler, few buildings are more delightful. Of ornament they make no pretence. All their features are constructional, from the arches and the parapet to the spurs on the piers that point up stream to direct the current into the arch, and save the pier from the shock of floating timber or wreckage in flood time. And so, on a grander scale, who can deny the praise of architecture to the stone bridges over the Thames at Richmond and Kew, the new bridge at Putney, and London Bridge, which is the finest and also the plainest of them all. In all these structures what pleases is the simple unaffected adaptation to the purpose they are to fulfil, and the natural straightforward construction by which this is managed. They have, in point of fact, scarcely any other qualities by which they appeal to us, nor do we ask them for any : their constructive merits are enough.

Nowhere is a constructive system more plainly and simply expressed and made more absolutely the ruling motive than in the half-timbered building in which our country is so rich. Owing to our abundant forests it played perhaps a more important part here than abroad, though there are many fine examples of it in France and Germany. The Market Hall at Ledbury is a good specimen. It consists of a single room carried on posts, seven on a side, three at the end, forming an open storey below. (Fig. 23.) The heads of the posts are framed into beams or plates on which the floor-joists rest, and to steady the posts laterally there are bracing pieces framed in to form spandrils between beam and post. Standing in the town street the area of the ground floor had to be restricted, but at the first floor level there were not the same reasons against extension, and the great room above was made larger by projecting it so as to overhang the lower storey. To effect this, the floor-joists are run out beyond the plate and act as cantilevers, and on the end of these the timber framing stands which forms the sides of the room. These sides consist of uprights and cross-pieces, which are steadied by cross-bracing, and the intervals are filled up and plastered inside and out. The windows are formed by omitting some of the cross-framing between post and post, and another plate all round the head of the side framing carries the roof.

The Market Hall · Ledbury ·



West Elevation

South Elevation.

FIG. 23

In this building every feature is constructional: the storey posts of the ground floor to carry the superstructure; the bracing spandril-pieces to keep the tottering posts firm and steady; the joists that run over and project to carry the walls of the upper storey; the posts and rails of these upper walls with the cross-bracing to steady them laterally; the roof above with its tie-beam trusses; all are necessary parts of the fabric, which would not stand without them. Nothing is introduced for mere ornament; and the effect depends quite as much on the satisfaction the eye receives from the way in which the structure explains itself visibly as from the agreeable proportion and picturesqueness of the design.

In a still simpler style are the great timber-framed barns, with posts dividing them into a nave and aisles, of which that at Harmondsworth, in Middlesex, is well known, and has been illustrated * more than once. (Plate XI.) Here there is absolutely nothing whatever to be seen but the bare construction of posts, ties and braces. There is not a stick in it that is not necessary to the stability of the structure; not a vestige of what would vul-

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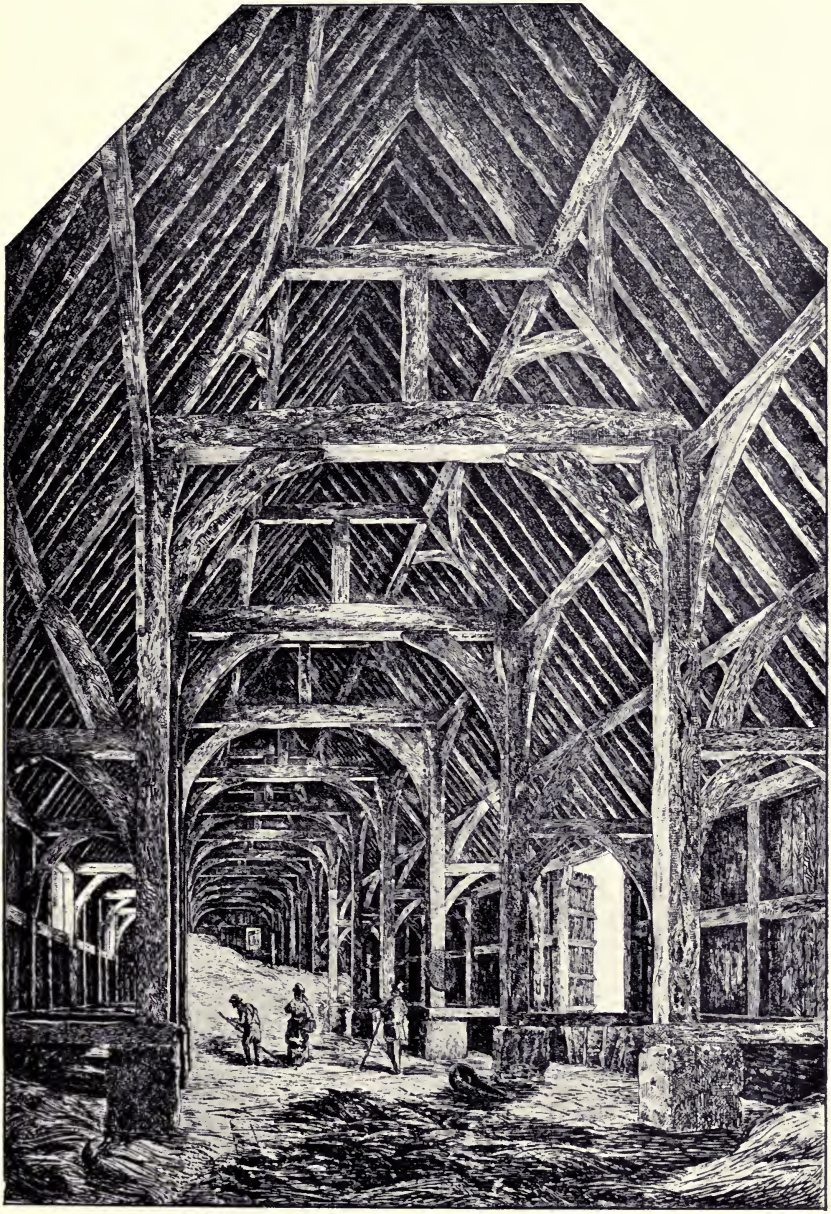
* "Spring Gardens Sketch Book," vol. i., Pl. 56–57, where it is drawn to scale. *Building News* Sept. 21 1877.

garly be called Architecture; and one feels instinctively that the introduction of anything of the kind would be an impertinence and simply disfigure it. But for all that, it *is* a work of Architecture, and an admirable work, exactly suited to its purpose, and its dignified simplicity awakens in its own degree emotions weaker, no doubt, but of the same kind as those that move us when we stand in the nave of a great minster. The effect owes much, to be sure, to the *chiar'oscuro* of the interior, which introduces the element of picturesqueness and mystery, but it depends even more on the sensible lines of the framed construction which the light and shade of the background throw into relief.

It would be easy to multiply instances, but these will suffice to show that the forms of simple construction, stripped of all ornament and every shred of architectural detail, will suffice by themselves to please the eye and to satisfy the judgment of any intelligent observer by the reason that inspires them. In other words, when the construction is intelligible, it is found to be interesting by every person of intelligence.

It is, of course, only in simple buildings like these that the constructive reason is so



THE BARN AT HARMONDSWORTH

To face p. 78

easily seen that it can hardly escape anybody. In greater and more elaborate works, such as those grand French portals that have just been described, it is not at first sight so apparent, and for general observers it needs explanation. But yet unless the reason that governs the design is appreciated the interest it is capable of awakening is half lost. Without understanding the principle of subordination of orders the imagery of the great vault at Amiens becomes a chaos, to the orderly arrangement of which we have no clue. It is the same with various other features of Architecture to which we are coming a little later on. And for this reason, if for no other, it is surely worth the while of every educated person who is interested in the art to try and acquaint himself with its main constructive motives.

That architects should regard the great buildings of the past with somewhat different eyes from those of other people is of course inevitable. It is ours not only to study but to create, and we study, therefore, with a view to creation. We have to analyse and dissect our subjects, and to see how they are put together. We have to catch the motive of the designer, and detect the problem of construction which he had to solve; we must discover what it is in the design that pleases us or displeases us, and why it does so; and we must store up in our memory for future use the lessons we gather from our examination. The unprofessional observer, of course, has no need of all this research, and yet if he is to get from what he sees all the pleasure he is capable of receiving from it he will not be content with a mere superficial impression of beauty, but will look a little below the surface and try to understand something of its meaning.

It is the misfortune of Architecture that it is seldom judged in this way. For most people that superficial impression is enough. They like the building or they do not like it, and they know, or think they know, what pleases them or the contrary. Too often their judgment is only based on the criticism of others and not on the genuine impression produced on the mind by what they see, which, if they would only trust it, instead of listening to what they are told to think, would, I believe, often save them from many a mistake. For, after all, the function of art is to please, and while bad art will never stand the test of sincerity, no work that is capable of inspiring genuine pleasure and sincere enjoyment can be wholly bad.

But, of course, for this to be true, the enjoyment must be really genuine and sincere, not assumed in deference to the opinion of others.* I have tried to show that this enjoyment is more likely to come from the better understanding of the subject. And yet we have lately been told that to ask the unprofessional lover of Architecture to look a little below the surface, and try to understand something of the reasons which underlie the outward appearance of what he sees, is to make the subject uninteresting to him or to any but professed architects.† Architecture, whether old or new, cannot be judged fairly or enjoyed as it should be except intelligently. Some knowledge of astronomy surely adds to our admiration of the heavens; some acquaintance with botany makes our gardens more interesting; and some experience of painting, even though it be merely amateurish, increases our respect for the pictorial art and our appreciation of its treasures. And I feel sure that the outside observer would get more delight from works of Architecture, whether old or new, if he had mastered the fact that the beauties of form and proportion that pleased him were not mere fanciful products of the imagination, but were based on natural law, and deduced from certain principles. Architecture would have a new meaning for him, and as he traced the thought that ran through the design he would find a new pleasure in realising better the personality of the artist, and reading his intention, his difficulties and his solution of them.

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* Quin etiam obest plerunque iis qui discere volunt authoritas eorum qui se docere profitentur. Desinunt enim suum judicium adhibere: id habent ratum quod ab eo quem probant judicatum vident.

Cic., "de Nat. Deor.," Lib. i. 15.

† *Edinburgh Review*, July 1905.

For construction is not the dull subject that some would have it to be. It only needs to be understood to become interesting. One might almost say it only needs to be seen. When it is nakedly exposed, as in great engineering works of iron, for instance, in the Forth Bridge or that at the Victoria Falls in South Africa, it appeals at once to the reason and to the imagination : one sees at a glance the problem and its solution, and derives satisfaction from seeing it. It is true that when the work is purely utilitarian it may not touch our artistic sense, though even then the fitness of the thing will give pleasure. Here it is that Art comes in. It is the business of Architecture to carry things a step farther :

to bring science into harmony with Art, and not only to construct well, but to construct beautifully. In Architecture of an advanced kind the connection between constructive science and Art will, of course, not be so obvious. In the engineering works just referred to, the construction is nakedly expressed, but in the nave of a Gothic cathedral, or under the dome of St. Paul's, it is the artistic form that first appeals to the sense, and the construction has to be sought for. And yet it never really fails to make itself felt. I believe that a man's estimate of a building will be affected by considerations of construction even when he is wholly unconscious of it. Why, for instance, does everyone instinctively feel that a tower, if it is to look well, must slightly diminish as it rises and have a slightly convex outline. Every architect knows the need of this, and he secures the desired effect either by regularly diminished buttresses, or, if there are no buttresses, by setting each stage of the tower, as it rises, slightly within that below it. A tower built as wide at top as at bottom would offend the most uneducated eye. By a well-known optical illusion it would seem to spread at the top and bulge outwards, and everybody would condemn it as top-heavy.

But why should top-heaviness suffice to condemn it? There is no general law in Nature that things should not be wider at top than at bottom; on the contrary, most of Nature's organisms are top-heavy. Every plant, every bush, every tree expands, as it rises, far beyond its base, and every animal, man himself, is more bulky above than below. If Nature does not build pyramidally, why must we do so?

Clearly what affects our estimate of the tower, even if we are unconscious of it, is the feeling that it must stand firm, and that things stand more firmly if the base is wide, and if the centre of gravity falls within it; and that in the case of a lofty narrow building, like a tower, the equilibrium is more easily upset than in a lower one, and, therefore, greater precautions must be taken to make it steady. Consequently, we reserve our approval for the outline that carries out these principles, not only practically but visibly to the eye, giving to the building that air of strength and stability without which the design would excite no pleasure.

For the same reason we give our large columns an entasis. A mere cylindrical column, like the undiminished tower, would look top-heavy, wider at top than at bottom. To give it the proper appearance of stability so necessary to a column, which is essentially an unstable feature, easily upset, we diminish it from base to capital. But that is not enough. If the column is merely tapered like a funnel it will, by another well-known optical illusion, seem concave in outline, and everyone would pronounce that unsightly. But why unsightly? Surely the reason is that we know a column needs to be strong, because it carries weight, and the eye expects the robuster outline given by the convex line, and so we get the classic entasis.

Again, in spires, especially early spires of the broach type, which have no pinnacles to fill out the profile, it is well known that the outline is generally made slightly convex. Otherwise, if they were simply pyramidal, they would seem to have a hollow outline, and that would be disagreeable. But why should it be disagreeable? It is not because of the form itself; there are many such forms in Nature which please us well enough. Why do we object to it in a spire? Surely the reason is because a character of strength and stability is especially demanded by so lofty and slender a structure, and to the eye the hollow outline seems constructively weak, as if it were falling in, and the fuller outline is necessary to satisfy us that the structure is solid and stable.

In the Gothic spires this convex outline is attained, as has just been said, by giving the spire an entasis like the classic column. In the classic spires of Wren and Gibbs and their successors, beautiful structures of which London may well be proud, such as Bow steeple, and the campaniles of St. Mary-le-Strand and St. Martin's-in-the-Fields, the same conical outline is secured by other means; by pinnacles, urns, or vases, or other features which fill up the breaks between the different stages and produce the desired effect. Even in the spire of St. Bride's, in Fleet Street, which consists of a number of similar stages superimposed and apparently diminishing regularly, it will be found that a bounding line touching the nosing of the cornices will give a convex outline to the whole structure. Sometimes the same result is obtained by a domical finish to the tower, carrying a lantern, as in Wren's pretty little church of St. Benet, Paul's Wharf, and at St. Martin's, Ludgate Hill, or by a lantern storey set well inwards but not too much, of which Christ Church, Newgate, furnishes a good example. There are no finer instances than the admirably designed western towers of St. Paul's, where anything like a weak or hollow outline would have been especially offensive from its contrast with the swelling dome behind.

In all these instances the common consent of mankind has agreed to prefer the fuller outline to the emptier one; that is to say, the stronger form to the weaker. And what does this mean, but that it is to a certain extent to the test of construction that works of Architecture are brought for judgment, by the common opinion even of those people who would disown any knowledge of the subject.

And when Architecture indulges in bolder feats of construction it is obvious that the interest increases in proportion. Why do such structures as the crown steeples of Newcastle, Edinburgh, Aberdeen, and St. Dunstan-in-the-East excite not only surprise and curiosity, but also admiration? It is not that they are more beautiful than other steeples, for there are hundreds of steeples that surpass them in that respect. It is not merely that they are novel and surprising, though no doubt that has its effect on the observer. But the main impression they make is that of constructive daring, and of a difficult problem audaciously challenged and successfully solved. Such structures will never be forgotten by the most casual observer, and in their case nobody can deny the interest which a feat of architectural construction is capable of exciting.

When, therefore, we plead with the unprofessional lovers of Architecture that they ought not to be satisfied with knowing the mere outward forms of the style they affect, but should look a little deeper and try to trace their meanings as a step to a truer appreciation of their beauty, we can assure them that there is no mystery about it, but that if they were to analyse the impression which they receive from what they see they will find that they have already been in the habit of applying, although imperfectly, those very tests which we would have them recognise more fully.

The importance of this recognition of the true principles of criticism by the outside world cannot be over-rated. It is for the general public and not for themselves that both Art and artists exist, and the Art of any time will be such as the public demand. As Lord Leighton once said, "What you demand, that you will get, and according to what you accept will be that which is provided for you." *

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* Address at the first National Art Congress by Sir Frederick Leighton, P.R.A.

In Art the balance hangs true between demand and supply. When a false standard of criticism prevails among general society the Art of the day will reflect it, and be itself false and bad.

If we apply this test to the Art of the present day, the conclusion we shall have to draw from it will not be very encouraging. As we turn the pages of the illustrated Architectural periodicals, or walk along the new streets of our towns, or wander into their outskirts and suburbs, or even go farther afield into the country, the estimate we shall have to form of the average quality of modern Architecture will be disagreeable enough. It is true that there is a considerable output of good sensible Architecture and even of really fine work, better, I think, than anything that has preceded it since the opening of the nineteenth century. But what proportion does it bear to the flood of pretentious vulgar work among which we have to search for it? If the nature of the demand is to be gathered from the supply the conclusion is inevitable that what the public taste as a rule demands is coarse display, smart ornament, startling splendours of granite and marble, cheap cast repetitions in terra cotta, corner turrets and spires, projections and oriels, columns and capitals, plenty of features, surfaces belaboured with common sculpture at so much a yard, and all the bounce and puff of an advertising age. This, it is to be feared, is what the general public consider to be Architecture, and one has heard sober work, practised under restraints of reasonableness, condemned as hardly coming within the pale of Architecture at all. If the best of what we do is, as I believe it is, better than the best of what preceded it, our worst is infinitely worse than that of our forefathers, and in much of our street and villa architecture we seem indeed to have reached a bathos, for it is hardly possible for Architecture to sink lower.

So long as this is the popular taste in Architecture there is little hope of its recovery. A minority of sincere artists will never succeed by themselves in raising the general level of the Architecture of their day so long as the public at large remains ignorant or indifferent. The small proportion of honest work that is done is not enough to leaven the whole lump. Art cannot lead a healthy life, or make any vigorous growth if it is cultivated only as an exotic for the enjoyment of the cultured few. Really to live it must pervade the whole of what we do, driving out false conceptions such as those just described, and substituting those true principles on which all good design is based. And this can only come about by the acceptance of these principles on the part of those for whose enjoyment Art exists, that is to say, the general public, to whom artists look for employment.

Till there is a public demand for good Art, and a public recognition of it when it is offered, there will never be a fair field for the conscientious artist. Assuming that as many men with artistic instincts are born in one age as another, it is only in those happy periods when they find an enlightened and sympathetic public that they can make their mark. In other ages they either perish unappreciated or unknown, or they fall to other and more profitable pursuits and are lost to Art. The education of the public in matters of Art has been the subject of addresses and papers at Art Congresses and similar occasions for many a year. Slade Professorships and University Extension Lectures have done something to popularise the subject: Art has become fashionable, and it is the thing nowadays to have a taste. This is something, though it may not amount to more than a general superficial interest in the matter with most people. But there is, I believe, an intelligent and increasing minority who are genuinely interested in it: to them we must look for that encouragement of good design without which it will languish and expire. It is most important, therefore, that they should understand the true principles on which the excellence of any work of Art is based, and I have tried to point out one aspect of Architecture, and that the most important of all, which is generally overlooked.

If it is important in the case of the general public that this should not be overlooked, it is scarcely necessary to say that to the student of Architecture it is essential that he should regard Architecture from the constructional basis on which every good style rests. For what human anatomy is to the painter and sculptor construction is to the Architect. It is the backbone, the skeleton of architectural design, which has to be clothed upon with accordant forms of architectural detail, and decorated with appropriate ornament, just as the human skeleton is covered with muscle and skin and adorned with draperies. And as the skeleton is the framework on which the whole figure is built up, so the system of construction which is adopted should give the general lines of an architectural design, and find expression in the forms into which it falls. This is a maxim of which the student in Architecture should never lose sight, whether he is studying existing works old or new, or designing works of his own. In the one case he should search for the underlying constructive motive in the work he has chosen for his study, and not be seduced into forgetting it by the more superficial attractions of detail and ornament, and when making designs of his own he should build them up as it were from the foundations round the framework or skeleton of construction, with which he must perforce begin, in such a way as to express and illustrate it, in the same way in which the painter or the sculptor moulds his figure on the structure of bones and muscles which the skin covers without concealing.

Bearing this general principle in mind, that good Architecture is the outward expression of good construction, we may now go on to trace its influence in the development of the styles of the past, and show that many of those outward characteristics by which we recognise the style are in a great measure derived from causes of a practical and not purely æsthetic nature.

CHAPTER V

DEVELOPMENT OF VAULTING AND ITS EFFECTS

By the preceding account of the growth of the Romanesque, and afterwards of the Gothic capital, out of the old Roman type, it appears that there was a reason which governed the development even of what at first sight seems a purely decorative feature, with which fancy might be allowed to do as it pleased. In the same way a constructive reason accounts for the origin of subordination of orders, which quite revolutionised the whole method of arcuated construction, and led up to such splendid triumphs as the portals of Amiens and Paris, and the arcades of our English cathedrals.

We may now carry the illustration of this principle further, and trace the influence of rational causes on the whole plan and construction of the great post-Roman buildings of the Middle Ages.

It should be remembered that the main constructive problem of the mediæval architects from first to last was the vault. Whether from ideas of permanency, or security from fire, or of simple magnificence and dignity, a stone roof was always their ambition—an ambition that for a long time they were not able to realise as they wished. They had before them the great structures of the Roman world, with which not only Italy, but a large part of Gaul, especially in the south, and to a considerable, though less extent, England was still adorned. Many of these were vaulted, some of them on a stupendous scale, like the Pantheon and the Baths of Caracalla and Diocletian at Rome. The tradition was continued under the empire of Eastern Rome, when the dome especially received further development, achieving its crowning triumph at Sta. Sofia in Constantinople by the invention of pendentives, which revolutionised the whole system of dome building for all time.

In Transalpine lands, however, skill equal to that of Isidore or Anthemius was wanting. When Charlemagne built his royal chapel at Aquisgrana he had to import architects from Italy, and his domed church and tomb-house is a version of Justinian's church of S. Vitale at Ravenna, as any one who has seen and compared the two must admit. The version, it is true, fell far short of the original; but the powers of the native artists were unequal to carry on the art even at that lower level: and down to the eleventh and twelfth centuries vaults north of the Alps were managed successfully only on a very modest scale.

It was not merely by want of skill, but also by want of means that the early Romanesque builders were hampered. Poverty and deficiency of appliances controlled their efforts. But just as similar difficulties had led to the discovery of a remedy in the invention of subordination of orders, which changed the whole character of arched construction, so in the case of the vault, where considerations of greater magnitude come in, the stress of poverty and the need of economy gave a novel direction to the methods of construction which resulted in a complete revolution of plan, and affected the whole style and conception of Architecture. The builders of the Middle Ages determined that in one way or another they would have vaults, and as they could not attain to the Roman way of making them they tried fresh expedients till they found another, and having found it they developed it in most unexpected directions.

The stability of a vault, like that of every arched construction, depends on its abutment.

It is a vulgar idea that an arch is an element of strength. People talk of arches binding a building together. Nothing can be less true. An arch is a system of wedges, each of them driven home by the load at its back, and each striving to rend the structure apart. This results in what is called the thrust of an arch; and this must be resisted by some immoveable mass, which constitutes the abutment. If the abutment stands firm the arch is then, and only then, an element of strength: if not, it is nothing but an engine of destruction.

How, then, did the Romans on one hand, and their mediæval successors on the other, achieve that stability which was necessary for the security of their construction?

They did it very differently. Here (Fig. 24) are their two methods side by side for comparison, and applied to two somewhat similar buildings. One is the so-called Temple of Jupiter, now the Duomo, at Spalato; the other is the Chapter-house at York. They are both octagonal buildings, both have stone roofs, and they are not very different in size; the Roman example being 44 ft. 8 in. in diameter inside, clear of the walls, and the Gothic one about

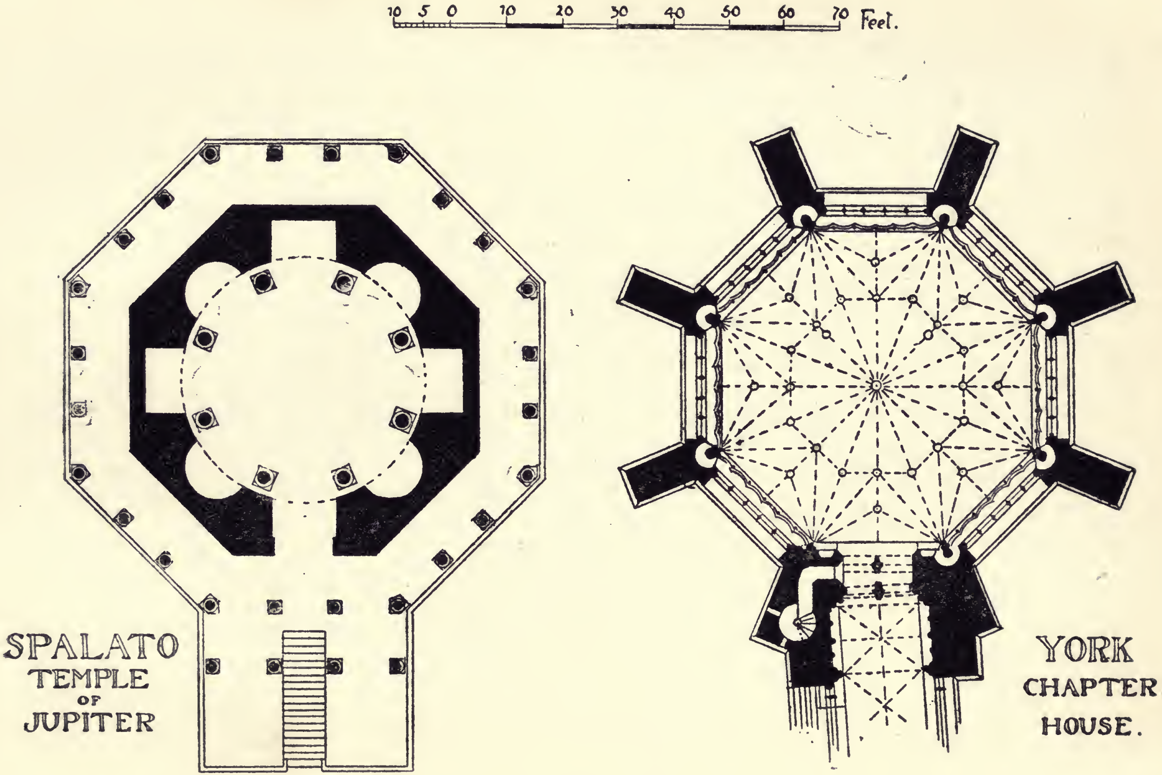

10 5 0 10 20 30 40 50 60 70 Feet.
SPALATO
TEMPLE
OF
JUPITER
YORK
CHAPTER
HOUSE.

FIG. 24

55 ft., and they are shown in the illustration to the same scale.

The contrast between them is very striking; while one seems all wall the other seems all window, and the larger of the two, by a sort of paradox, is the slighter in construction. At first sight one might think that unless the one were too strong the other must be too weak. And yet if the sturdier of the two has survived the vicissitudes and the wear and tear of fifteen centuries, the other has justified its construction by a life of over six hundred years, and may very likely, with proper care, last for as long a time again or even longer.

The truth, of course, is that in the two styles of which these buildings are examples stability was sought and found by different means. How they differed, and how the later mode of construction was slowly but regularly developed out of the earlier, will be best understood from the following series of examples:

Fig. 25 is a section of the Temple at Spalato, of which the plan is given in Fig. 24. It is covered by a dome of brickwork with a span of over 44 ft., which of course exercises a very considerable thrust on the walls: for a dome is an arch—an arch rotated on its axis, just as a barrel or waggon vault is an arch prolonged laterally. When, however, one considers the massiveness of the walls, one is

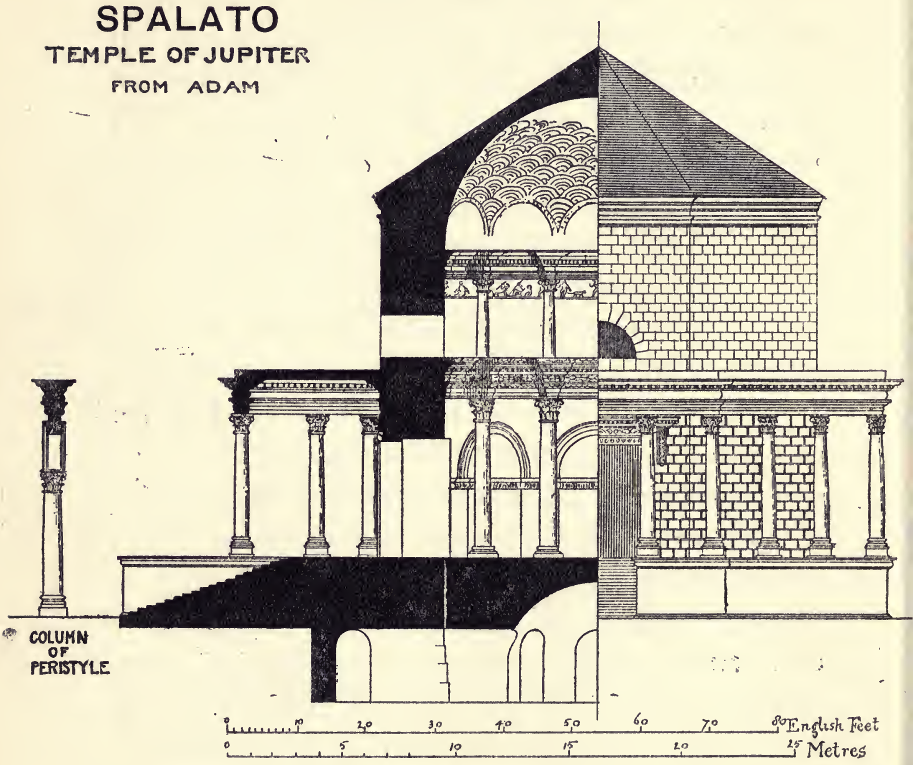


FIG. 25

reassured, and feels that by their mere bulk they will be quite able to hold their own against any thrust the dome is capable of bringing to bear upon them. This in fact is the principle by which Roman construction was governed. To the thrust of their mighty vaults and domes they opposed the resistance of inert mass and weight in massive walls which the thrust was unable to overbalance. The structure was further consolidated with excellent mortar, that in time set as hard as the brick or stone it bound together, and the result was a form of building that seemed calculated to defy time and to last for ever, unless it were wilfully destroyed.

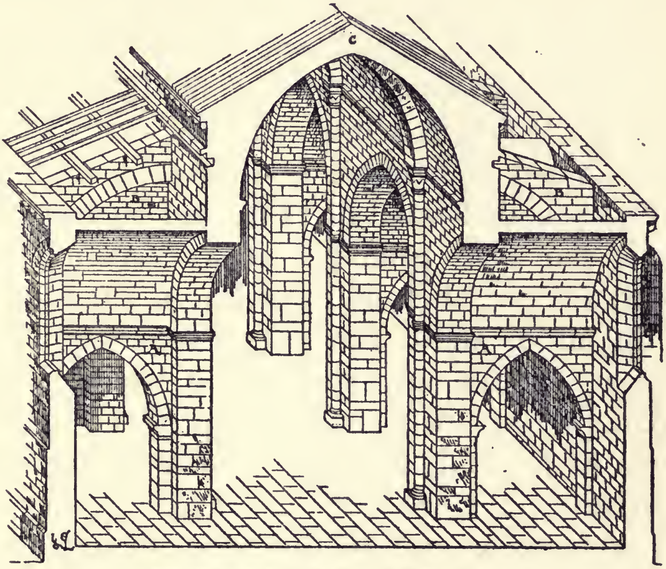
On the Roman system of building, in short, equilibrium is obtained by passive resistance, —by the mere inertia of mass and weight. For the thrust of an arch or a dome is of course only a matter of weight, and if the passive weight in the abutment is enough to absorb and annihilate the active weight or thrust of the vault the result is equilibrium and stability.

This principle of construction, however, was far beyond the resources of early mediæval builders. It demanded excellent mortar, and theirs was bad ; vast quantities of material, and they were poor ; and their attempts at vaulting on anything but a very modest scale generally led to the ruin of their buildings. The records of all the great buildings of the times are full of disasters ; walls bulge out and fall, towers tumble down and drag the building with them, and the whole structure sometimes had to be rebuilt within less than a century after its foundation. It was only by the experience of many a failure that the architects of the Middle Ages learned at last a new principle of construction, that of attaining stability and equilibrium by opposing force to force, as well as weight to force; but this lesson once learned changed the whole system of building construction.

For a long time the vaulting of Romanesque churches was confined to the aisles, where the span was moderate and the difficulty proportionally less. The nave remained covered with a timber roof, as it is to this day at Peterborough, where, though the aisles are vaulted, the nave retains its original Norman roof of wood with a painted ceiling.

When naves first began to be vaulted it was natural that the simplest form of vault, that is to say the waggon or barrel vault, should be adopted.

Fig. 26 explains by a diagram an early system of vaulting a nave with aisles. The vault over the nave is a waggon vault running from end to end of the building. These vaults were at first usually semi-circular in section, but inasmuch as the outer covering was in the solid of the vault it soon became obvious that a pointed section was better, and it was therefore very soon adopted, because it fitted



EARLY VAULTING from V. le Duc.

Fig. 26

more nearly to the gabled form of the exterior, thereby lessening the mass of masonry on the top and reducing the dead weight to be carried. There are in these Islands many examples of vaults of this kind in which the gabled roof and the vaulted ceiling below it are in one solid mass. In South Wales several churches are covered in this way, the finest example perhaps being that of the old Priory of Monkstone at Pembroke, which has a cradle vault of very considerable dimensions. There are other examples in Guernsey, at the churches of St. Sampson, Vale, Câtel, and St. Andrew, and probably elsewhere in the Channel Islands very like the Pembrokeshire churches, and there is the Chapel of Cormac at Cashel in Ireland, which was dedicated in 1134, and on a smaller scale the same principle of construction appears in several church porches in England.*

In all of these the entire covering is of stone, without any wood, the back of the arched ceiling being shaped up to the gabled form with rubble masonry, which in the finer instances is faced with an outer casing of wrought stone, but in the ruder examples is laid with slates, bedded directly on the rubble work. This, of course, makes a very heavy roof requiring good abutment, for which it is clear the side walls, weakened as they had to be by openings for arches to the side aisles, would not suffice, and some other source of strength had to be found.

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* The roofs of the ancient treasury of Merton College, Oxford, and of the curious chapel at Abbotsbury, in Dorsetshire, though not strictly following the same construction, resemble the others in having the same stone covering inside and outside.

The vaulting of the side aisles presented further difficulties, and fresh problems for solution. A continuous barrel vault parallel to that of the nave was not possible on account of the arches. One expedient is shown in the Fig. 26. At each pier between two arches a wall A was built across the aisle, pierced by an arch for the passage ; and from these walls waggon vaults were turned, with their axis perpendicular to that of the nave, and concentric with the arch opening from nave to aisle. This plan afforded room for lofty windows in the side walls, and the cross vaults supported the side walls of the nave and formed abutments for the main vault at their head. Further support was obtained by carrying up the short walls A, which cross the aisle, as buttresses B against the nave wall where the support of the cross vaults was wanting. These buttress walls B served another purpose also as supports for the timbering of the aisle roof.

By this method a secure constructive result is arrived at. But from the point of view of convenience it leaves much to be desired. The aisles might have plenty of light, but the nave would be very dark and gloomy, getting its only possible direct light from the two ends of the building. Moreover, the low arches crossing the aisles were destructive of any clear view or dignified architectural effect. The latter objection was met byadopting the cross vault, which had been extensively used by the Romans, and was not beyond the constructive powers of the eighth and ninth centuries on so small a scale.

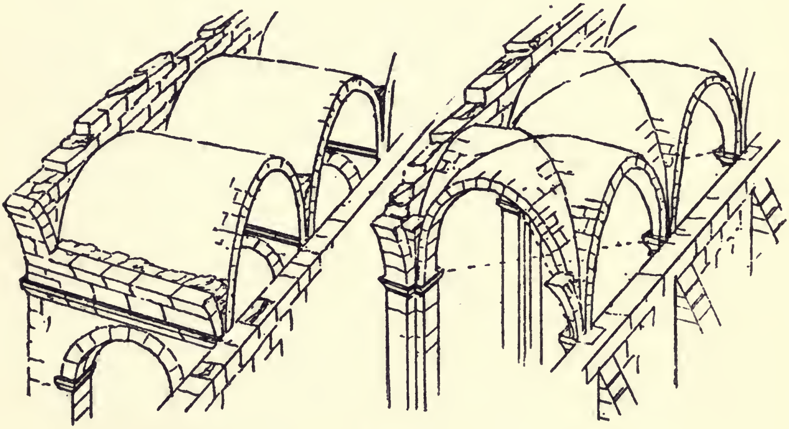


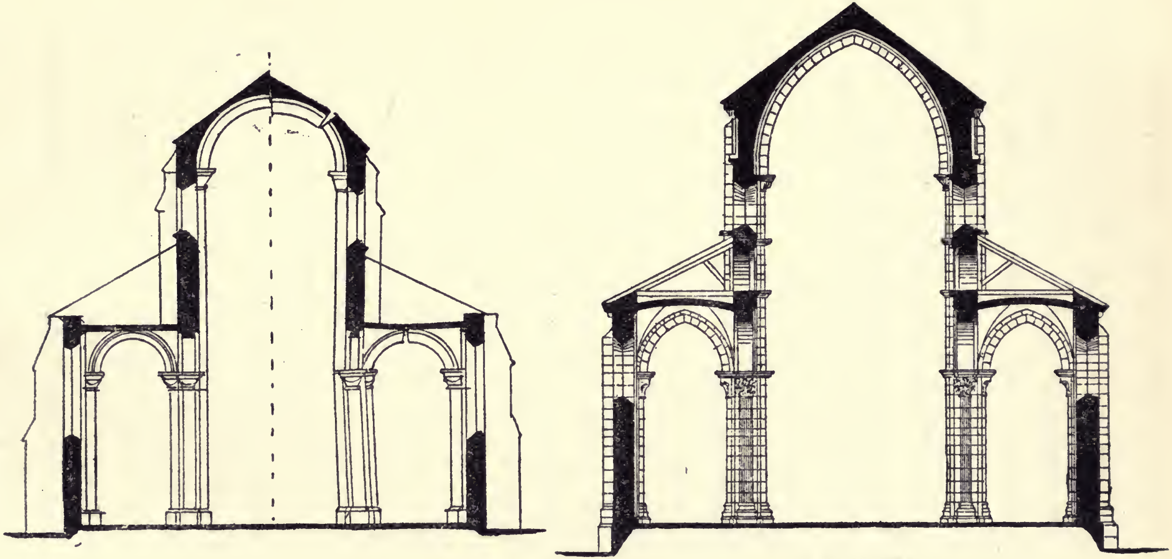
FIG. 27

To explain cross-vaulting we must have recourse to a diagram. Fig. 27 shows two ways of vaulting the aisle of a church. From pier to pier on the left hand of either figure would be the arches opening from the aisle to the nave. If a series of tranverse waggon vaults corresponding to these arches were formed across the aisle we should have the construction shown by the left-hand figure, which is practically identical with Fig. 26. We have now to imagine a single waggon vault not transverse, but parallel to the side walls and nave, running the whole length of the aisle and on its way intersecting this series of transverse waggon vaults as shown by the right-hand figure. The result will be that the lines of intersection will lie diagonally across each bay of the aisle as shown by the dotted lines on the horizontal plane of the springing.

This was the ordinary cross vaulting or groining of the Romans, executed generally either in brick or concrete, or concrete with ribs of brick embedded in it. It was adopted by the Romanesque builders as an improvement on that in Fig. 26, because it gets rid of the walls across the aisle and substitutes arches equal to those opening to the nave. The space for windows in the outer wall remains the same.

The other problem was more difficult, that of lighting the nave directly from the sides as well as from the ends. The vaulting and roof of the aisles covered the lower part of the walls, which therefore had to be raised to afford space for a row of windows as a clerestory above the head of the aisle roof, as is shown by the left hand example in Fig. 28. The nave ceiling as before is a waggon vault with a solid roof of masonry above. But by raising it in this manner we have deprived it of the support of the aisle vaults, and in fact the central vault has now no abutment, for the shallow buttresses outside are not sufficent for the thrust, and they only occur at intervals over each pier, and moreover, they rest on the back of the aisle vaults, which converts the latter into an element of danger. The right half of the section shows what would inevitably take place, and what did actually take place in a vast number of cases. The nave vault pushing the clerestory walls out, sank at the crown and rose at the haunches. This made the outside buttresses press more heavily on the aisle vaults, thereby increasing their thrust till they pushed the nave piers inward ; the aisle vaults opened and spread, and the whole fabric came to the ground, except perhaps the outer walls of the aisles.

Profiting by the experience of such disasters as this the builders of the cathedral of Autun (Fig 28 *bis*), though still employing the barrel vault for the nave, improved it by making it pointed instead of semi-circular, which made the direction of the thrust less oblique : and



AUTUN.

from V. le Duc.

FIG. 28

with the aid of an exterior buttress, and a strong transverse arch at each pier, they obtained a rather more stable construction. But though the evil was lessened it was not removed, and most of the great churches of this type which have survived have had their vaults strengthened by other means in later times.

But besides its weakness constructively the barrel vault had other inconveniences. Springing as it did so low down in the side walls it only admitted of very low clerestory windows, which did comparatively little towards lighting the nave, and left the great hollow space above in obscurity. This is very apparent in the section of Autun Cathedral (Fig. 28).

But the most serious objection to the barrel vault was that it exercised a continuous thrust equally along the whole length of the wall. It could, of course, be buttressed at regular intervals where the piers occurred, but for the distance between these points it had no abutment except the wall of the clerestory on which it rested. Various devices were tried to remedy this. Timber beams were laid along from buttress to buttress to stiffen the intermediate walls, but the timber decayed and left hollow spaces, making the wall weaker instead of stronger. The true and obvious remedy was, of course, to cross vault the nave as had been done with the aisles; but this was not so easy, not only on account of the great height and span of the nave, but for other reasons which need explanation.

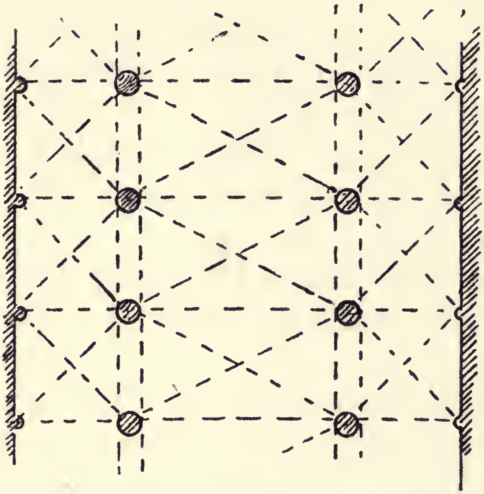


FIG. 29

Fig. 29 shows the plan of a few bays of a nave with aisles. For convenience the bays of the aisles, in Northern Gothic at all events, are generally square or nearly so. Consequently, since the bays of the nave, which is much wider than the aisle, must correspond in length with those of the aisle, the nave bays are not square but oblong. The groining of square bays, as in the aisles, being generated by the intersection of two equal semi-cylinders, presented no difficulties; but it was a very different matter to cross vault the nave where the main vault perhaps had a span twice as great transversely as it had longitudinally.* For a time this problem was too much for the architects; in England they went on, during the Norman period, covering their naves with wooden ceilings, and in many parts of France they did the same; and it seems to have been in Burgundy that the first attempts at cross-groining the nave were made.

According to M. Viollet-le-Duc the credit of taking this daring step is due to the builders of the Abbey Church at Vezelay, between 1089 and 1140.† In the interior view (Fig. 30) it will be seen that there are cross vaults, allowing ample light for the clerestory windows, which are here large enough to light the nave effectually, instead of being squeezed down below the springing line of the vault as at Autun. (Fig. 28, *bis.*) So far the plan was a success, but fresh difficulties presented them-

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* Square vaulting bays in the nave were of course obtained by sexpartite vaulting, each bay being equal to two of those in the aisle but the same difficulty of height occurs.

† "V. le Duc Dict. Rais": vol. i. pp. 182–184.

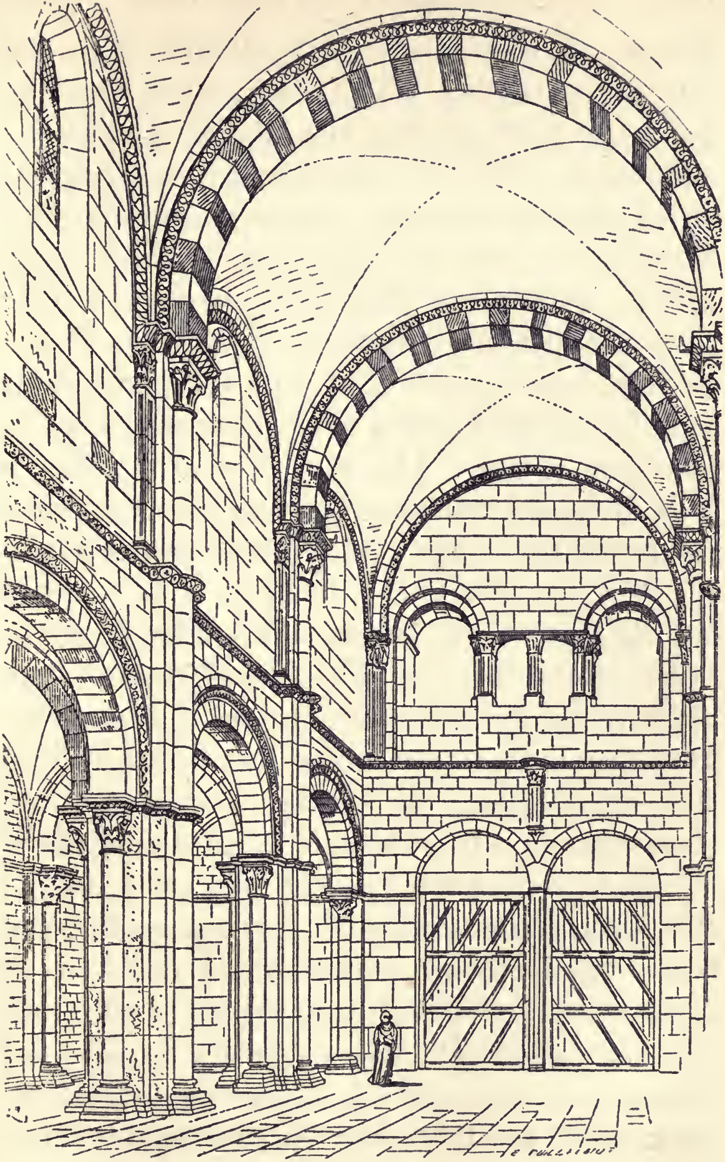


Fig. 30

VEZELAY

From V. le Duc

P

1089

selves. It will be seen that all the arches are still semi-circular, which necessarily fixes the height of each rigidly, the rise of a semi-circular arch being, of course, half its span. The cross vaults, therefore, are of a different rise from the main vault, differing as their spans differ. Now if the smaller or cross vault were projected horizontally from the wall (as shown in Fig. 31) it would cut into the main vault very low down and the intersection would be as the figure shows. This makes what is called a Welsh or coal-scuttle groin, and was often used in classic buildings. It may be seen in many of Wren's churches—in St. Paul's, and St. Bride's, Fleet Street; in Gibbs's church of St. Martin's-in-the-Fields, and, though very slightly expressed, in St. James's, Piccadilly. But this form found no favour in the eyes of the Burgundians at Vezelay, and they tilted their bonnet upward on a raking line till it reached the crown of the greater vault as the interior view shows. This created many technical difficulties, which need not here be dwelt upon in detail; the main point being that the intersection of two cylinders of unequal span, and meeting at an awkward angle, necessarily produces lines of intersection that will not lie in one plane or follow one curve, but will wind in a very curious and unsightly manner, and, what is worse, will weaken the vault at the groining line, which is already its weakest point.

Before proceeding to trace the further development to which these problems gave rise it is important to notice two results of cross-vaulting the nave even in this tentative way.

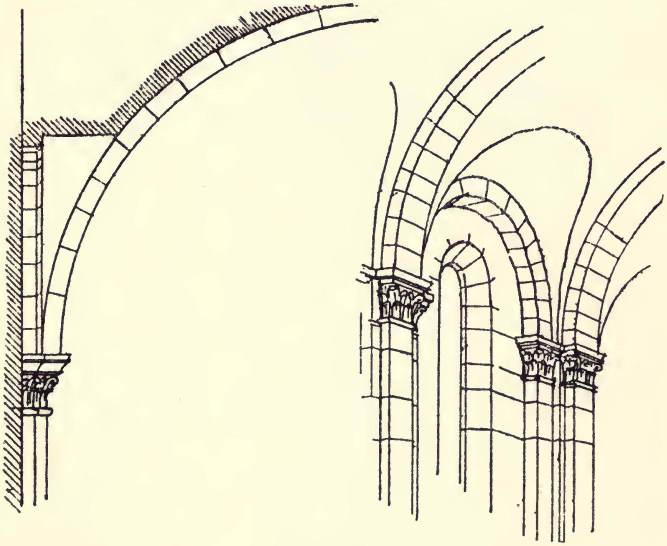


Fig. 31

In the first place the old solid covering of vaulted ceiling and roof in one solid mass of masonry, as in Figs. 26 and 28, became impossible, because the side arches and pockets of the vaulting no longer allowed a level eaves course near the springing of the great vault. It therefore became necessary to have an independent roof of wood, covered with lead or tiles above the stone vaulted ceiling. In this there were many advantages: it was easier to make the roof water-tight, especially in a northern climate of driving wind and rain; but, on the other hand, it substituted a combustible roof for a fireproof one, and, as a matter of fact, many of the Romanesque churches, both here and abroad, were burned down owing to their timber roofs.

But the most important result of all was this: that instead of the continuous thrust of the old barrel roof along the whole length of the wall the thrust was now broken up, and concentrated on certain isolated points, spaced at regular intervals, which alone it was necessary to fortify. When two equal arches meet in the same plane they neutralise their respective thrusts and convert it into a direct downward pressure. This is what happens to the side arches F F F in the vault shown in Fig. 32, which bring a dead load on the piers A B C D from which they spring. The same points receive the thrusts of the transverse arches E E and the diagonal groins G G. The pier A therefore receives the five thrusts, one direct, two oblique and two lateral, of all that part of the vault, and the resultant thrust of all these combined would obviously be in the direction H. The same thing happens on the other piers B C D, and the curtain walls A C and B D are now relieved of all thrust and have only themselves to carry. Consequently, if outside the points A B C D we apply some resistance equal to the resultant thrust of the transverse and diagonal arches the whole vault would be in a state of equilibrium and the structure secure.

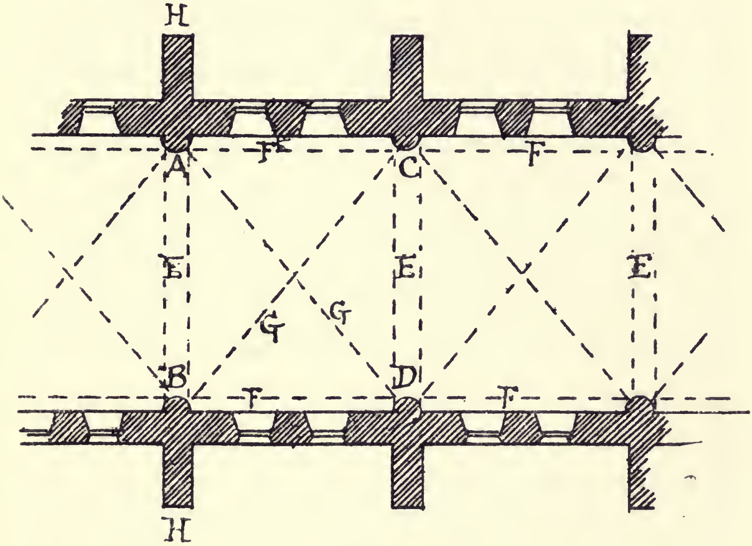


FIG. 32

How this resistance was provided we shall see presently.

The awkwardness that was found in managing these early cross vaults was due, as has been already explained in the case of Vezelay, to the rigid, unaccommodating round arch to which the Romanesque builders clung with devoted attachment, only giving it up when circumstances were too strong for them. This it was that brought the pointed arch into use, at first as a constructional expedient, and that only, the round arch which the builders loved best being retained when no difficulties of construction made its use inconvenient. Not that the pointed arch was a novelty at this time; it had been known and occasionally employed long before. For instance, in the pointed barrel vault, of which several examples have already been referred to, its utility in reducing thrust had been fully recognised and full advantage had been taken of it. The property which was now welcomed as a means of extrication from the difficulties attaching to the round arch was its elasticity in accommodating itself to any height. For the use of pointed arches made it possible to raise the apex of the narrow side arches to the same height as that of the great transverse arches or of the diagonal traced by the intersecting groins. The difficulty, however, remained of the awkward irregularity of this intersecting groin, occasioned by the unequal span of the direct and cross-vaults, which no amount of fudging could get into a good line, and this led to the introduction of a rib on the diagonal line G G like that of the transverse arch. These ribs were built first, independently of the vault, and therefore could be struck to a regular curve as easily as any other of the ribs: and thus the whole vault was furnished with an *ossature* or skeleton of ribs which was clothed upon by filling in with arched masonry the triangular spaces or panels between rib and rib. These fillings in had to wind and twist as was found necessary to bring them to rest securely on the back of the skeleton of ribs, but their irregularities did not offend the eye, bounded as they were in every direction by the regular curves of the ribs. This completed the development of the true Gothic vault of ribs and panels. It involved a new principle differing from the Roman or Romanesque plain cross-groined vault in which the strength lay in the vaulting surfaces themselves, while on the new principle the work was mainly done by the ribs, on which the vaulting surfaces in a great measure depend for their stability.

Fig. 33 is a diagram of a vault constructed on the rib-and-panel principle. The nearest bay shows the naked skeleton of ribs without the clothing of the panels of the vault. A transverse rib A divides the bays at each pier; there is a wall-rib E on each side wall, the span of which is equal to the length of the bay; and there are diagonal ribs B. All these three kinds of arched ribs are of different spans, but they rise to the same level, which, as we are no longer limited to round arches, is easy enough. As a matter of fact, the diagonals B in this diagram are semi-circles, and the ribs A and E rise to the level of the crown of the semi-circle, so that the main ridge D and the cross ridge C are level with one another. In the farther bays the ashlar filling-in of the panels is shown, as it is also in the plan. These panels rest on the ribs at their edges, but, of course, being themselves curved surfaces they have an arched construction of their own, which relieves the ribs to some extent. The vaults being now all level at the crown it is easy by raising the outer walls a trifle above them to construct the timber roof—now become a necessity—with

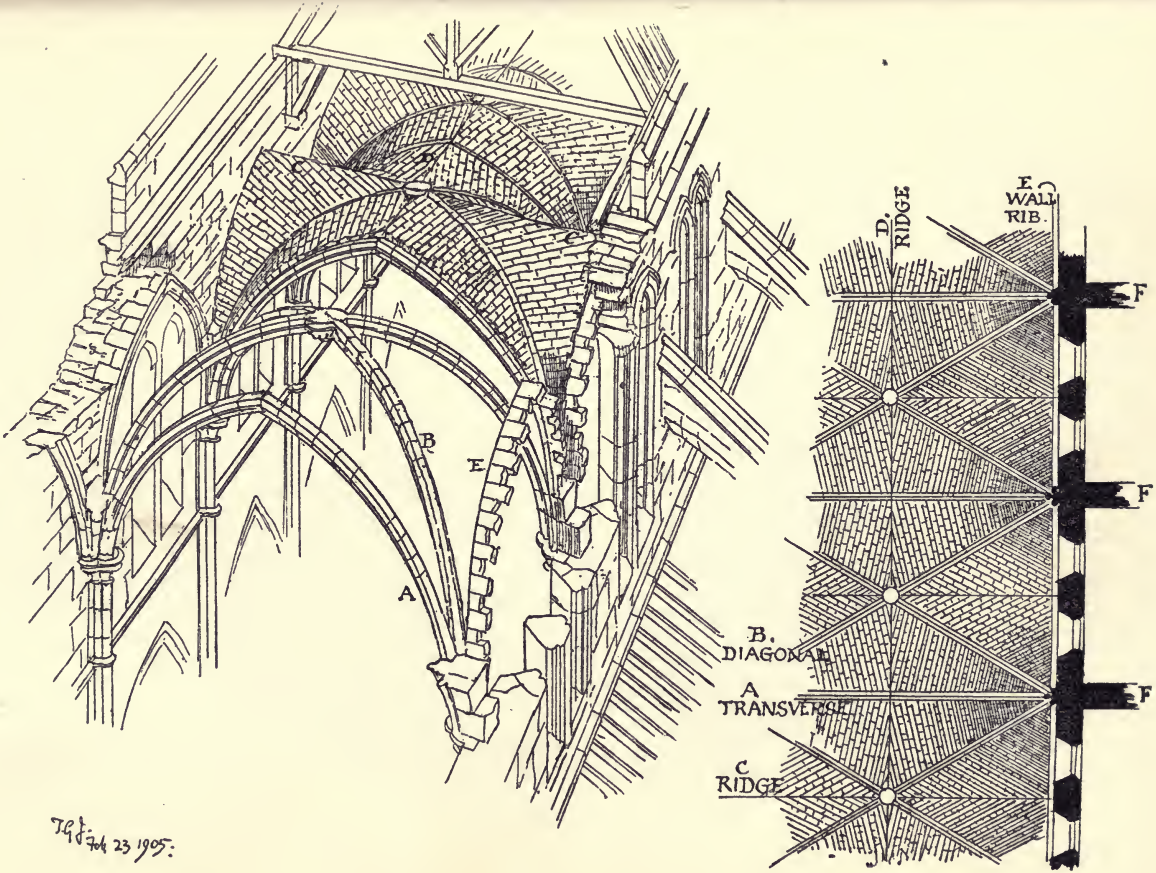
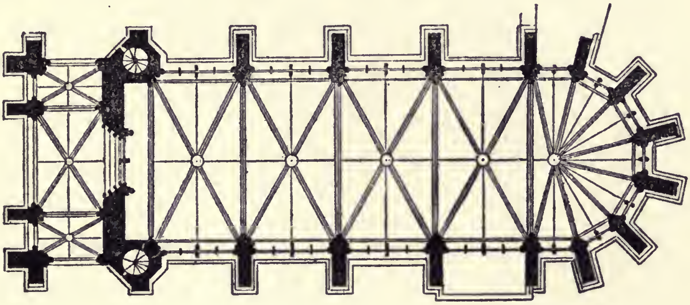

C
D
C
B
E
A
D.
RIDGE
E.
WALL
RIB.
F
F
F
B.
DIAGONAL
A
TRANSVERSE
C
RIDGE
T.G.J. Feb 23 1905.

Fig. 33

tie-beams from side wall to side wall, which is the only perfect way to frame a roof. The lofty arches E give ample space for fine clerestory windows, which rise nearly to the crown of the vault, instead of being depressed—as at Autun—below its springing.

Most of the objections and difficulties that had perplexed the Romanesque architect were now surmounted; the level crowns of the cross vaults admitted of a tie-beam roof, space was provided for large clerestory windows, and the walls between pier and pier were relieved from the thrust of the vault, which was now concentrated on an isolated point over each pier. It only remained now to fortify the construction at these points and then the whole fabric would be stable.

This was easy enough in a building which had no aisles. One had only to put a massive buttress at the points F F F (Fig. 33) heavy enough to resist the concentrated thrust of the vaults and the thing was done. A familiar example of this is the chapel of Eton College, which has the great buttresses intended to sustain a vault, although the vault was never really constructed. The construction is the same at King's College, Cambridge, although the lower part of the buttresses is pierced by doors of communication between the little chapels that fill the spaces from buttress to buttress. Another instance is the Ste. Chapelle at Paris, of which the plan is given in Fig. 34.



SAINTE CHAPELLE · PARIS
FROM V· LE DUC·

FIG. 34

But when there were side aisles, buttresses such as these would have been in the way, and some other expedient had to be found. The solid buttress was therefore removed from the outside of the nave wall to the outside of the aisle wall, which made it necessary to put some prop or strut across the aisle from the buttress to the clerestory wall to secure the main vault. A wooden strut would do this, and, in fact, when we have now-a-days to reconstruct a flying buttress we do sustain the vault temporarily during the operation by wooden shoring from the exterior buttress. In permanent structures this prop becomes stone, and is supported by a light arch below, on which it flies across the interval of the aisle, and conveys the thrust of the nave vaults down to the distant buttress pier.

Fig. 35 gives a section of Westminster Abbey taken through the nave and aisles, and a ground plan of two of the bays. Looking at the right side, there is first the great buttress pier; and from it, at two levels, spring flying buttresses to support the superstructure of the nave. The lower of the two impinges on the clerestory wall at the point where the thrust of the vault would leave it. The intention of the upper is probably to meet any possible tendency of the wooden roof to spread.

In these and similar constructions, of course, no less than in those of the Romans, there must be somewhere a *point d'appui*, a fixed immoveable base, the ultimate recipient and neutraliser of all active thrusts. In the Gothic construction just explained this is provided by the buttress pier, whether attached to the main wall as in the St. Chapelle, or removed beyond the aisle as at Westminster. But the flying

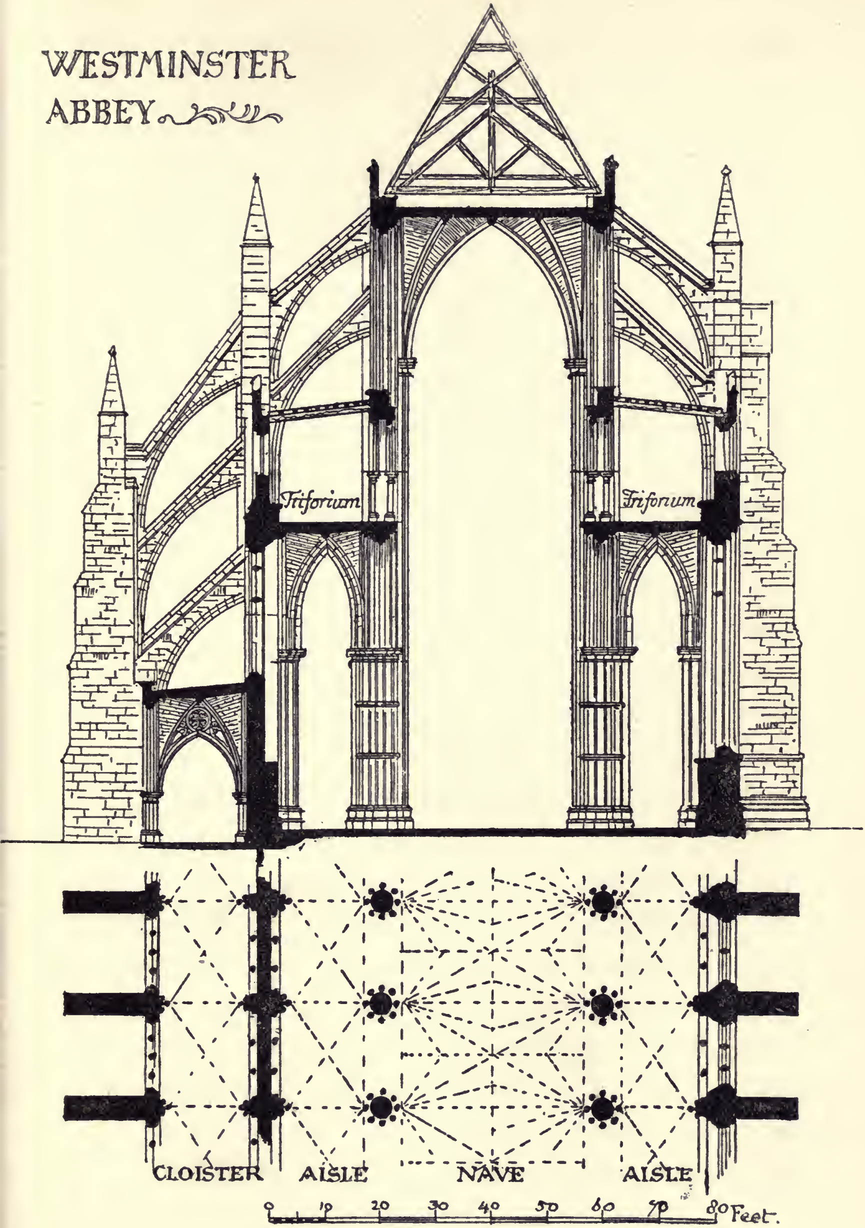

WESTMINSTER
ABBEY
Triforium
Triforium
CLOISTER
AISLE
NAVE
AISLE
0
10
20
30
40
50
60
70
80 Feet.

FIG. 35

buttress introduces a novel element of resistance. Suppose for a moment the nave vault and clerestory were taken away: obviously the flying buttresses would fall inwards into the nave. The tendency to do so constitutes in fact a thrust, exercised against the counter-thrust of the nave vault, and neutralising it; for the resultant of the two forces meeting in this way is a direct downware pressure, a mere dead weight on the walls, arches, and columns of the nave. And here we have completely developed the Gothic principle of construction by equilibrium of forces, partly counterbalancing and neutralising one another, and only depending for stability to a diminished extent on the external buttress piers, isolated bay by bay, which alone are required to be absolutely immoveable.

It would surprise many people, as they stand in the silence of some great Gothic minster, whose ancient stones seem to have grown old in peaceful calm and slumberous quiet, if they were to realise the truth that so far from everything being at rest around them they were surrounded by mighty unseen forces engaged in active combat, thrusting and counter-thrusting one another in fierce encounter, a never-ending conflict that never slackens between antagonists that never tire; the high vaults striving to push the walls outwards but rebutted by the flying buttresses which try to push them inwards; the aisle vaults doing their best to push the nave columns inwards, but unable to move them under the dead weight of the superstructure of triforium and clerestory which holds them down; the whole fabric struggling to burst itself asunder, but manfully resisted by the system of countervailing forces, which only bargain, as a condition of success, that their great parent buttresses outside shall stand like a rock, and give them a firm foothold from which to get a purchase. These great buttress-piers, therefore, the only passive members of the construction, are made bulky with a deep projection in the line of the thrusts, and as an additional precaution, to steady them still further, they are loaded with heavy pinnacles whose weight helps them to annihilate the force which attacks them obliquely.

The left side of this section of Westminster Abbey shows a further development of this method of construction. It was desired to form the north walk of the cloister close up to the side of the church. Consequently the main buttress could not be placed against the aisle wall as on the north side of the church, for it would block the cloister. On the other hand, the pier for which there was room on the top of the aisle wall was, of course, far too slender to resist the thrust of the flying buttresses. The main buttress consequently had to be moved another step farther from the nave, and to be placed outside the cloister-wall, at two removes from the nave instead of one. From this position a fresh set of flying buttresses are thrown to steady the slender intermediate pier upon which the flying buttresses rest half-way on their road to the great inert buttress-pier beyond, where at last the combatant forces find repose. A third flying buttress is added to the outer set to counter-thrust the aisle vaults, which might perhaps have been dispensed with, for the intermediate buttress-pier seems heavy enough to annihilate the thrust of these vaults by itself.

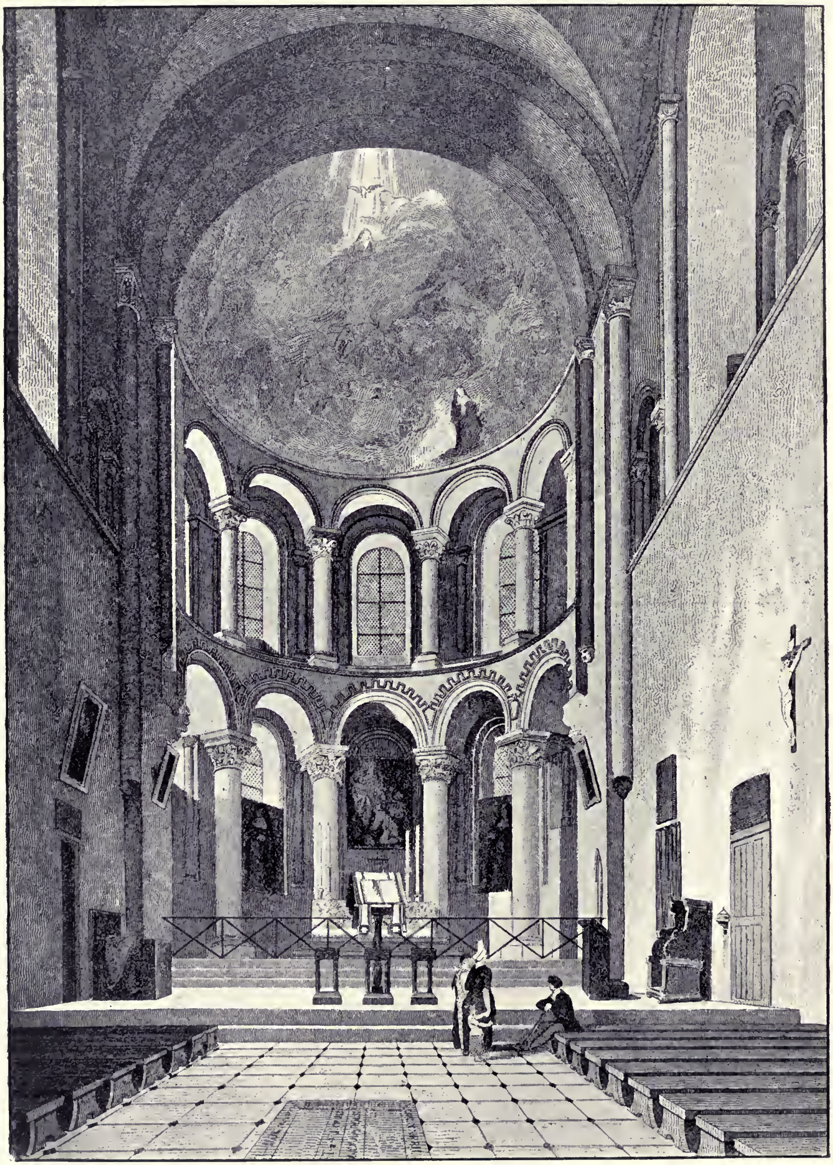
CHAPTER VI

DEVELOPMENT OF VAULTING AND ITS EFFECTS

This then is, in short, the history of the development of the main principles of Gothic construction, which characterise it, and differentiate it from all other styles of architecture. But the great point which it is important to emphasise is that these novel constructive methods not only characterise it, but are in fact the main causes which shaped the style into the form under which we recognise it. The adoption of the pointed arch was not the result of deliberate choice on artistic grounds, for we have seen that the round arch was liked better, and was only given up with reluctance, but it was occasioned in the first place as a way of escaping the thrust of the semi-circular arch, and in the second place by the difficulty of vaulting parallelograms with the inelastic round arch, and the facilities afforded by the pointed arch of bringing arches of various spans to the same level at the crown. Cross-vaulting again was adopted to escape the difficulty of supporting the continuous thrust of a barrel vault, and also that of lighting the central nave by a clerestory under a roof of that kind. From the system of cross-vaulting and the concentration of thrusts on isolated piers of support arose the whole machinery of buttresses and flying buttresses, and the system of ensuring stability by equilibrium of forces. And as a consequence of the direct and cross vaults being brought to a level came the need of an upper roof of timber and lead. All these changes, which amount to a revolution in constructive methods, and a complete abandonment of the old Roman principle of attaining stability by the resistance of inert mass alone, followed logically from suggestions of necessity and convenience, not from any purely artistic imagining of new forms; and so from first to last the new art of post-Roman Europe was based upon the solid ground of reasonableness.

It remains to follow more particularly the influence of the new methods of construction, on the details of the great buildings of the Middle Ages.

The favourite termination of the choir abroad was an apse, following the tradition

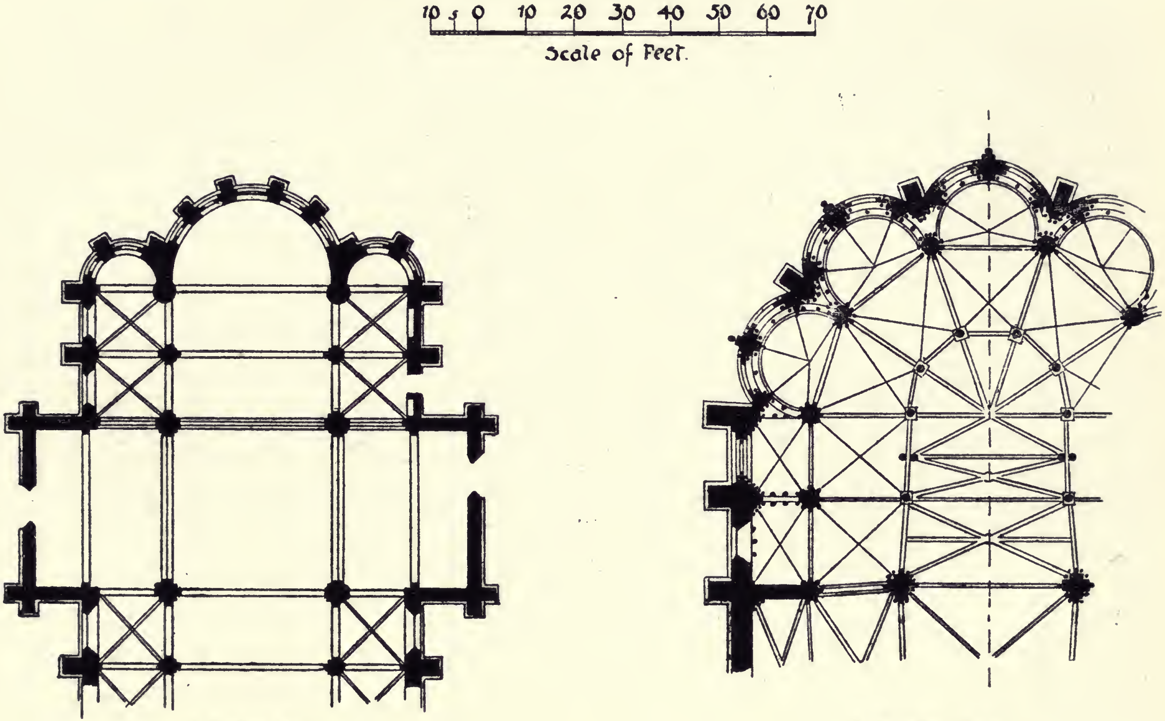


CAEN—THE ABBAYE AUX DAMES

To face p. 131

of the Roman Basilica. In England the square end was the usual plan in the Early Celtic oratories, which was continued in many of the Saxon churches, such as Bradford-on-Avon, Escomb, Dover and others, especially those of an early date. The Normans brought with them the fashion of the apse, with which most of our cathedrals were originally finished, though in subsequent rebuildings the native predilection for a square end gained the day, and gave us the great east windows which are among the principal glories of English architecture.

To adapt cross-vaulting on the rib-and-panel system to a square-ended church was easy enough ; but at first sight it does not seem so easy in the case of an apsidal end. In the early barrel-vaulted churches the apse was covered with a semi-dome like the basilican churches at Ravenna and Salonica, or the Romanesque churches in Germany, and St. John's Chapel in the Tower of London. The Cathedral of Autun affords an example of a barrel-vaulted choir finished naturally in this way with a semi-dome (Fig. 36). The other plan beside it shows the east end of the choir at Vezelay, where the typical French *chevet* with polygonal apse surrounded by an ambu-



AUTUN·

·VEZELAY·

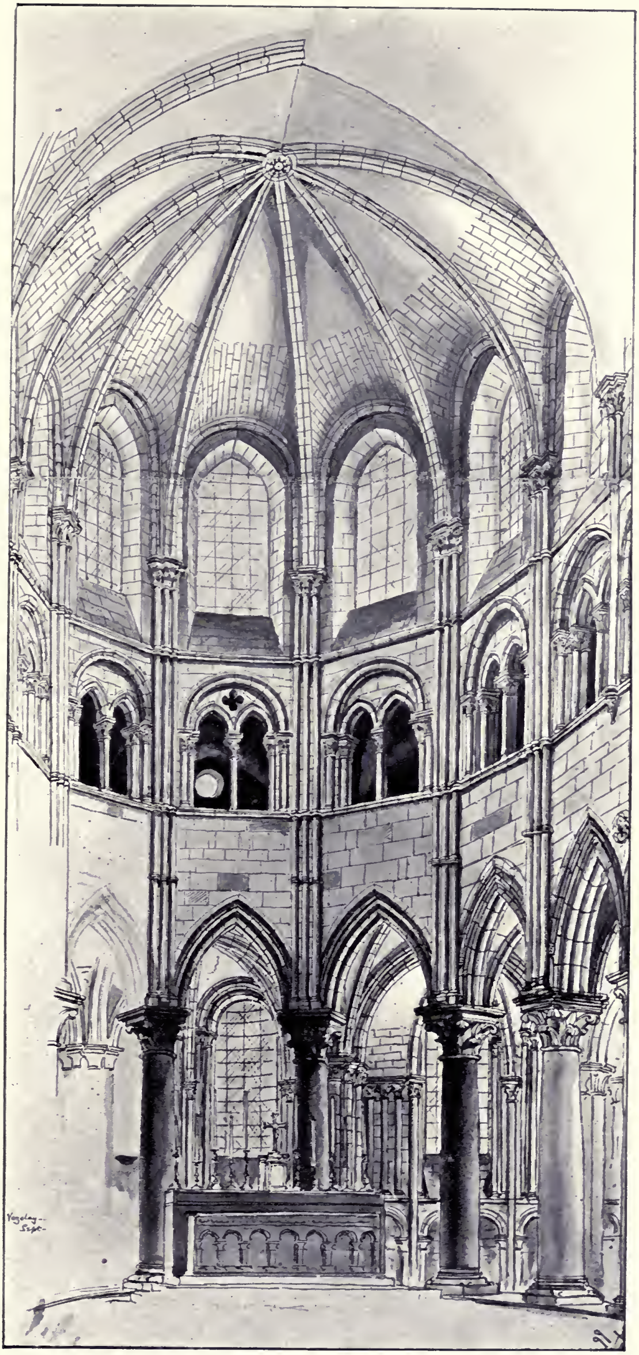
Fig 36

latory aisle, with radiating chapels beyond, is fully developed. Of this plan we have no example in England except at Westminster, which, though thoroughly English in every detail, has an east end planned upon the French model. It will be seen how by a system of radiating ribs the cross-vaulting of the choir at Vezelay is finished in the apse. The ribs meet in a boss in the centre of the apse, where they are encountered and counter-thrust by the last two diagonal ribs of the main vault.

The advantages of this in providing a light clerestory are obvious. In the view (Plate XII.) from an etching by Cotman of the interior of the apse in the church of the Abbaye aux Dames at Caen, which is covered by a semi-dome, it will be seen that the apse windows have to be kept down quite low beneath the springing of the dome, the result being a great want of light in the most important part of the church, and a great loss of dignity in the windows themselves, which are inferior to those in the rest of the church. In the apse at Vezelay both these inconveniences are removed. (Plate XIII.) Each of the narrow bays of the apse is stilted till its arch reaches the level of the main vault, and room is thus provided for clerestory windows in the apse equal to those in the side walls of the choir. The vault, it should be observed, has to be stilted too, and for a long way up it is only a thin wall on the back of the vaulting-rib. As elsewhere, the construction depends on the piers between the windows on which the vaulting-ribs descend, and against them on the outside, of course, flying buttresses are applied, to convey the thrust to distant piers beyond the ambulatory aisle, which are set out on radiating lines from the centre of the apse.

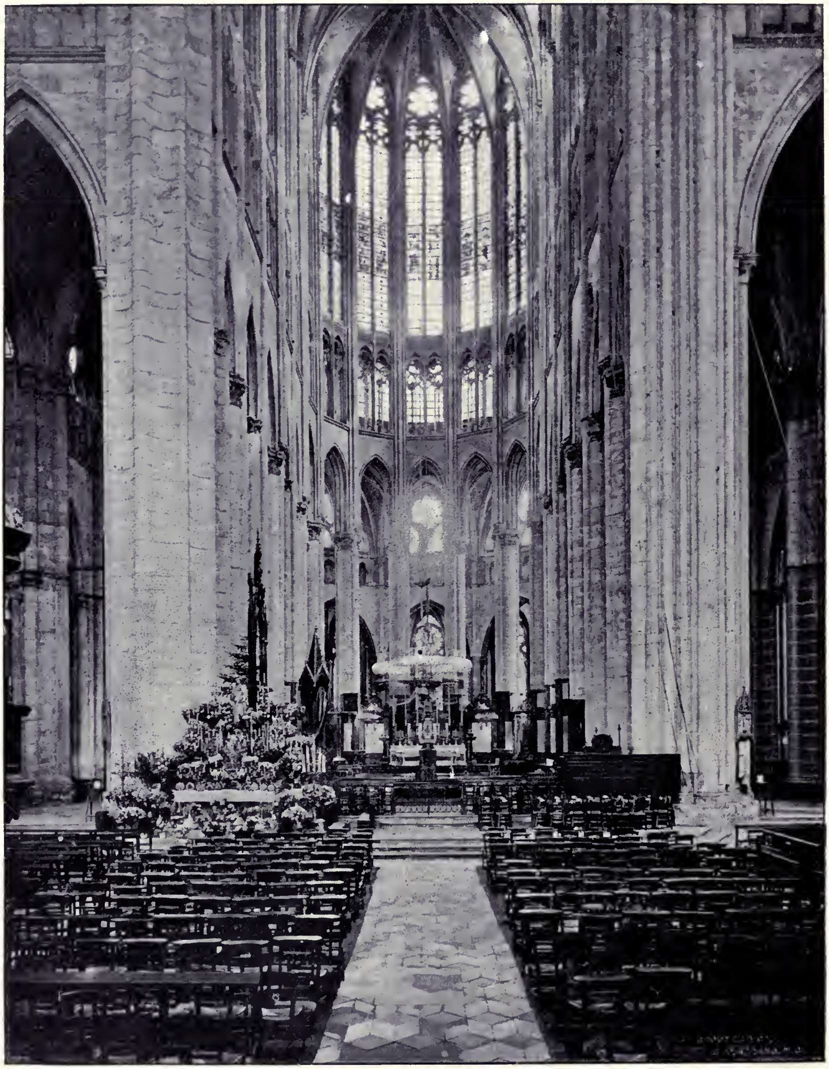
In the apse at Beauvais (Plate XIV.) this form of construction is pushed to its farthest limit. The structure has by this time become a mere lantern, a framework of stone filled in with open arcade below and clerestory window above. Construction by equilibrium of forces is here pushed to its logical conclusion, and while the working members of the architecture are duly emphasised, the rest become mere supplementary items which can be treated lightly. For it will be understood that since the introduction of cross-vaulting concentrated all thrusts upon the isolated piers, the wall intervening between pier and pier had been relieved of the greater part of its use in construction, and was only required now as a curtain or wall-veil to enclose the interior of

Plate XIII



VEZELAY—THE APSE

To face p. 134



BEAUVAIS—THE APSE

To face p. 135

the building. It had little more to do than to carry itself and to steady the great piers sideways, as the buttress and vault steadied it directly from front to back. Consequently provided the piers were made strong enough to support the dead weight into which the opposing thrusts had been converted, the wall-veil might be made thin, and be pierced with openings, or hollowed out into galleries, without any danger to the fabric. At Beauvais the triforium is even pierced through and glazed with windows on the outside, producing an extraordinary light effect, and leaving the great piers standing almost alone, merely connected in the slightest possible way by the head of the arcade, and the traceries of the triforium and clerestory. It would be impossible to carry the principles of Gothic construction farther than this.

The anatomy of such a building will perhaps be better understood from the sectional sketch of Amiens Cathedral in Fig. 37, by which it will be seen how very little solid wall remained between the great constructive piers. Below are the great arches of the openings between nave and aisles. Their function is to form a facing to the aisle vaults and to steady the great piers against which they thrust. Above is the triforium, consisting of an open arcade towards the nave, of very slender tracery work, in many cases open backward to the space over the aisle vaults and under the aisle roof, as at Westminster (Fig. 35), or, as at Beauvais, pierced with windows to the open air, but here at Amiens enclosed at the back by a thin wall of no substantial strength, leaving a narrow gallery in the thickness of the wall which runs round the whole church. Above this is the clerestory, a range of large windows, often, as here, completely filling the side arches of the vaulting, and therefore counting only as void spaces filled with glazing. Theoretically, the whole of this inter-columnar structure of arcade, triforium and clerestory might be taken away, and yet leave the framework of the building with the vault above it standing, a lantern of stone, a constructional skeleton.

It was the use of the pointed arch, be it remembered, that made this construction possible. The round arch tied the designer down to rigid proportions: it was the elasticity of the pointed arch that set him free. And yet it is remarkable with what reluctance the architects at the end of the twelfth century abandoned the round for the pointed arch.

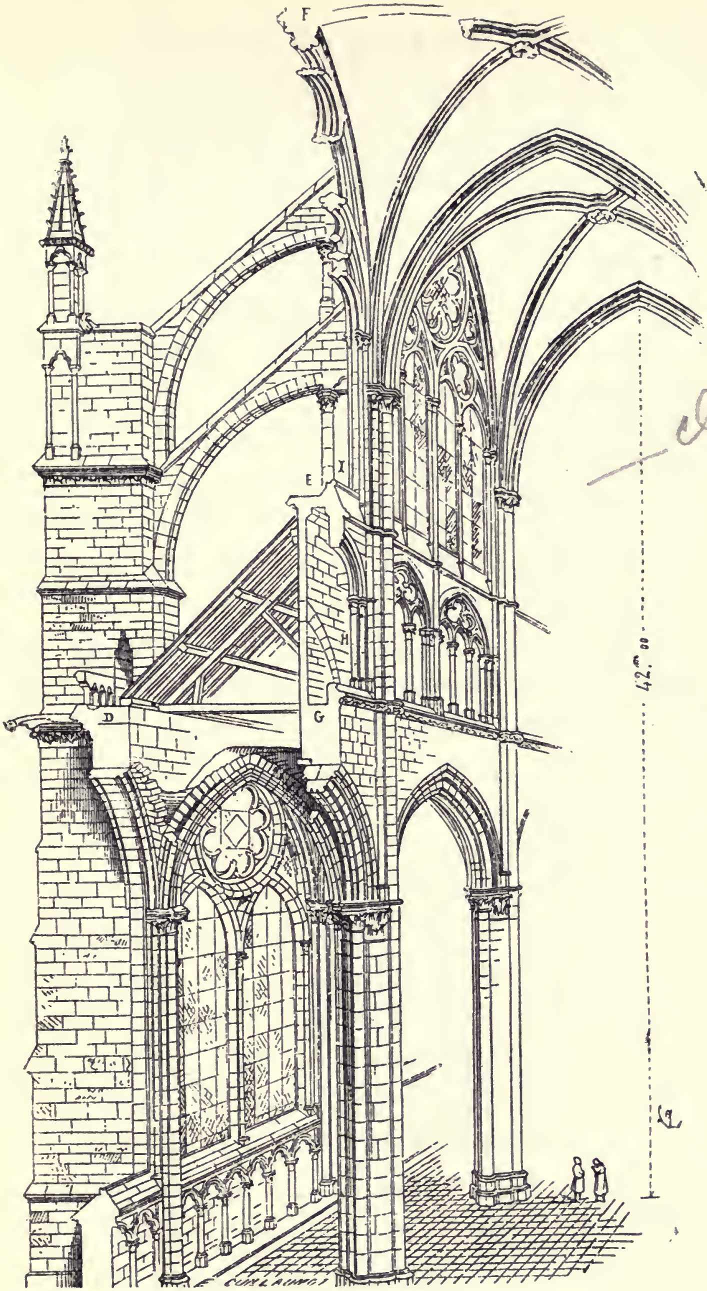


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FIG. 37

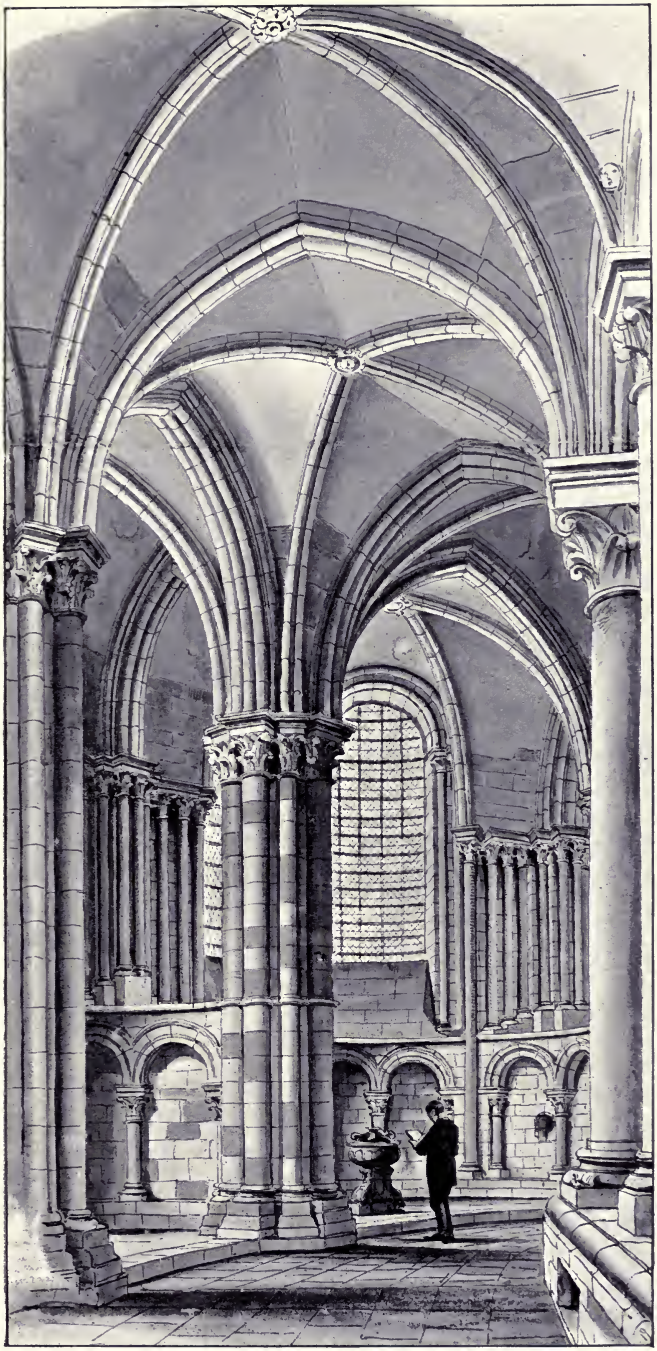
AMIENS CATHEDRAL (Section of Nave)

S

From V. le Duc

As in the choir aisle at Vezelay (Plate XV.) it is common to find round and pointed arches used together: pointed arches being adopted for the constructional members, in the great arcades, and in the vaulting; but where no structural necessity occurred, as for instance in the window heads, and the ornamental wall arcading, the round arch holds its own; showing that the architect loved it best, and only gave it up when forced to do so by stern necessity. And in this is to be found perhaps the strongest confirmation of our original thesis, that the key to the right understanding of Gothic architecture will be found in the study of its constructive rather than of its æsthetic development. To some extent this is true of all styles, but in no other is the truth so plainly confessed as in this.

The attachment to the round arch was stronger on the Continent than with us: in France, where Classic influence made itself felt down to a comparatively advanced stage of the Gothic style; in Germany, which continued its round-arched Romanesque for nearly two generations after it had been given up in France and England; and, of course, in Italy, where the round arch was perhaps never wholly discontinued; while in Dalmatia they

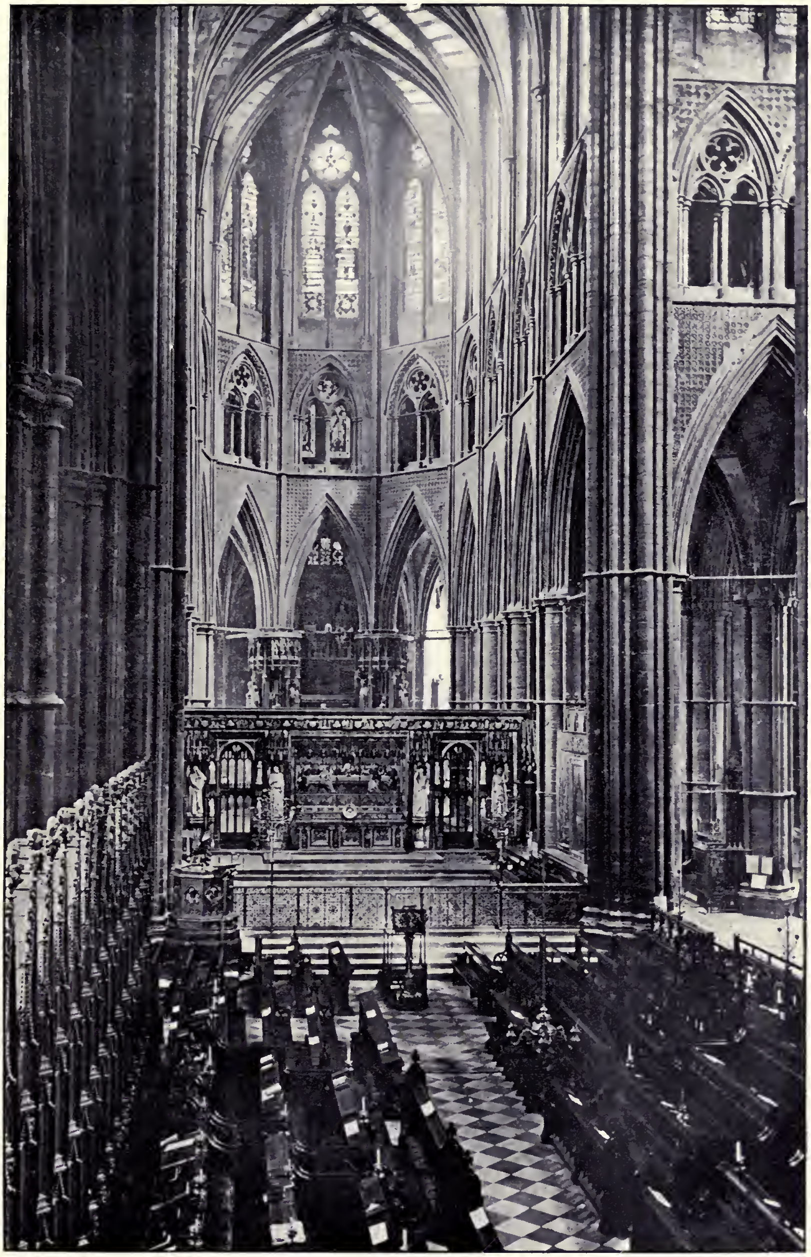


VEZELAY—THE CHOIR AISLE

To face p. 138

went on with their native Romanesque almost till the round arch came in again with the Classic Renaissance of the fifteenth and sixteenth centuries. In England classic tradition was never so strong and was soon lost ; and the pointed arch was adopted with something like enthusiasm, and pushed in the Early English or lancet style, which is peculiar to us, sometimes to the verge of extravagance. Our beautiful abbey of Westminster was built after the rage for excessively pointed work had begun to subside, but there are no such acutely-pointed arches in a French cathedral as those in Henry III.'s exquisite choir and transepts. (Plate XVI.)

Another effect of the new principles of construction was to increase the height of the buildings. In the soaring fanes of Christendom it has been usual to trace the expression of a faith that aspires heavenwards, and leaves the earth to seek the skies. This is an instance of the way in which symbolic meanings have been read into Art by amateur criticism, of which the artists have been wholly innocent in intention. As a rule Romanesque churches of the tenth and eleventh centuries were not remarkable for height in proportion to span, though those ages were in devotion certainly not behind those that succeeded them. The causes that led to the lofty proportions of Westminster and Amiens were the same that we have been tracing in following the history of their construction. The aisles had to be of a good height for the sake of the side windows. The crown of the aisle vaults fixed the springing level of the aisle roof, and the height required for the sloping roof of the aisle gave that of the second storey or triforium. The head of the aisle roof fixes the level of the sill of the clerestory windows, which must be lofty to light the nave properly and also to fill the space provided by the cross vault, the height of which was fixed by the span of the nave. Above the nave vault is the timber roof, high pitched and with parapets. A glance at the section (Fig. 37), of any Gothic cathedral will show that the growth in height was inevitable, and resulted naturally from the ordinary principles of Gothic construction. That it was consciously based upon any motive of religious significance is a purely sentimental fallacy, not the least weighty of the reasons against it being that the thirteenth century, when these lofty proportions first began to be remarkable, is the age when the practice of Architecture finally passed from the hands of clerics to those of laymen.



WESTMINSTER ABBEY

To face p. 140

It would of course be untrue to suppose that while from such external reasons as the foregoing their buildings grew to loftier and still loftier proportions, the architects failed to appreciate the consequent sublimity of the result. No doubt they did so to the fullest extent, and made the most of the opportunity as true artists naturally would do. But the parts relatively played by constructive and æsthetic considerations in the formation of a style had better be dealt with in another chapter.

CHAPTER VII

RELATION OF ART TO CONSTRUCTION

THE question may be asked, If the development of Architecture is to be accounted for in this way by the stern demands of necessity, and if every characteristic of a style is to be traced to expedients of economy or the needs of convenience, where does Art come in? Does not this view of Architecture reduce it to a matter of good sound and convenient building, and remove it from the category of Fine Arts?

This is, in fact, the vital question to which all that we have said hitherto is intended to lead up. It must, of course, be admitted from the first that constructive necessities will not explain or account for everything in Architecture. Good sound building is not all, or otherwise there would be no difference between Architecture and engineering. It is quite true that the general forms of the several styles of Architecture by which we distinguish them, and the principles by which they are governed, rest upon a reasonable basis, upon the economical conditions of the age and people to which they belong, and that they are not the inventions merely of fancy or caprice, or of efforts of imagination. It does not follow, however, that there was no room left for the play of artistic fancy and imagination because the development of the main features of the style originated not in them, but in causes in which they had no part. If the suggestions for new departures in construction came from without, from accident, from circumstances beyond their control, from want of materials or want of pence, still almost everything depended on the way in which the builders received these suggestions and acted upon them. An inartistic people would do this very differently from one in which there was the true artist spirit. Here it is that Art comes in. It comes in as gracefulness may come into every action of life. It came in because the artistic sense was alive in the men of the day when these developments of construction were, so to speak, forced upon them by circumstances not of their own seeking. Some men and women will perform the commonest actions of life with grace and dignity, while others will do the same things ungracefully and ignobly: and just in the same way the builders in an artistic age will naturally carry out the ideas of sound construction in a manner that produces works of grace and beauty, while those of a merely utilitarian age, even though they follow the very same principles and methods of construction as their more highly gifted brethren, will build what may perhaps be useful and substantial, but is at the best commonplace and may perhaps be ugly.

Take for instance the subordination of orders. It was originally a mere economical expedient to save labour and material. The dull builder would use it only for that end. The artist equally recognises its utility, but he goes farther, and does it honour by making it a means of beautifying his design. For him the constructive idea is full of suggestions beyond those of mere usefulness, on which his imagination seizes; he moulds the orders in the arch; adapts his piers to them, from which results the clustered column, itself full of suggestions for infinite development; and by pursuing the same methods farther as he improves in technical skill he arrives at last at such splendid results as the great portals of Amiens, Reims and Paris, or the richly moulded arcades of our English churches.

Take again the vault. There is nothing in the mere fact of a stone ceiling to demand the treatment it received from the Gothic architects. A plain covering of stone or brickwork, cross vaulted when necessary, would have answered every purpose of utility. That is as far as mere engineering or building will carry us. But the Gothic architect saw possibilities behind the mere utility of the structure, and he developed the stone ceiling into the rib-and-panel vault, adorned it with carved bosses at the intersection of the ribs, and finally etherialised it into the cloister roofs at Gloucester, and the fairy ceilings of King's College and Henry the Seventh's chapel.

Pinnacles again were originally mere weights to load the buttress piers and steady them, and help to reduce the thrust of the arches to a dead vertical load. Any rude mass of stone or brick would have done this; but the artist accepts them as useful features, and proceeds to treat them with due respect, by making them beautiful, shaping them into graceful spirelets, adorning them with crocket and finial, and perhaps furnishing them with niches and statues.

And then the flying buttress. At first regarded askance as an awkward necessity, it came in time to be treated artistically, and especially in France to be received as a leading factor in the picturesqueness of the exterior.*

And so with the windows. As the isolated lights of the early Romanesque style were drawn gradually nearer together, and then grouped under one containing arch, till the pier between them was wasted down into a mullion and one large window resulted from the fusion of several small ones, it became necessary to construct within it some framework to support the leaded glass. Any plain bars of wood or metal would have sufficed, but in the hands of the artist the mullions branched out into delicate traceries, ever growing into greater intricacy and richness, curving in lovely lines, pierced with openings gracefully cusped, marvels of architectural skill and beauty, and a development from a simple origin surely as unexpected as it is admirable.

And so with the capital. For strength and suitability to the new duties required of it the plain cushion-cap of Fig. 15 (p. 45) would have sufficed; and regarded from a merely utilitarian point of view the development of the capital might have stopped there for ever. It was the artist temper that was dissatisfied with this simple piece of workmanship, and consequently proceeded to shape it into forms of greater gracefulness, and to embellish it with lovely sculpture, till we get the splendid capitals of St. Leu, Canterbury, and Wells. (Figs. 13–16 and Plate III.)

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* In England flying buttresses are not made so much of. At Winchester those of the nave are hidden under the aisle roof The Italians do not seem ever to have liked them ; they are represented by plain walls, as at S. Petronio, Bologna, S. Antonio, Padua, and at Assisi, and oftener still superseded by iron ties. I cannot but think they are overdone by the French and their German imitators at Cologne and elsewhere.

The writer of a very interesting article on the origin of Gothic Architecture, that appeared in a recent number of the *Edinburgh Review*, objects entirely to the argument from construction. He says that if the style is to be reduced simply to questions of construction it would cease to have any general interest for other people, and might very well be left entirely to architects.* He goes on to trace its source in the temper of mind and national characteristics of the newcomers who overthrew the Roman Empire, and substituted novel social and political principles for those of the older civilisation. To all that we cordially assent so far as it goes. There is no real difference between us, except that we think these causes are not sufficient by themselves. As we have fully admitted already, Architecture contains much which is beside and beyond constructional necessities, and cannot be accounted for by them. To maintain the contrary would be to push our argument to absurdity. But we think that the writer in dwelling exclusively on the influence of national and personal characteristics in producing Gothic Architecture has overlooked the physical and material conditions under which these characteristics had to act. He says: "A style so forcible supposes the existence of a distinct thought. It must have existed in the minds of its builders before it existed as architecture. It was an idea before it was a fact."

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* "Mr. Jackson tells us that the whole change came about owing to the fact that the builders of our Gothic cathedrals were obliged, from motives of economy, to use small stones instead of large ones . . . in explaining away our difficulties Mr. Jackson and Mr. Russell Sturgis explain away our interest. We find we were ignorant of something which to us, not being professional architects, is of no importance. What wonder if, humbly accepting the explanations given, we incline for the future to leave architecture to the architects."—*Edinburgh Review*, July 1905, p. 189.

This to our thinking is to put the cart before the horse. The whole history of Architecture shows that the style is not the creation of any preconceived artistic idea to which the facts are accommodated, but the reverse. This is proved by the examples given in preceding chapters, where we have traced the origin of many artistic ideas in the stern facts of constructional necessity. What we maintain is that at the root of every fresh departure in architecture, whether Gothic or any other style, when it is in a wholesome state, will be found a reason; which reason consists in some practical necessity or some condition of conveniency outside the range of æsthetics; and that whatever embellishment or modification may be added from considerations of a purely æsthetic nature, still the reason which supplied the original motive for taking a fresh step in development will not be lost sight of, but will find expression in the forms which the Architecture assumes. When it is forgotten the style naturally falls into decrepitude: it becomes conventional, and worthless, because it deserts the true principles of Art no less than the painter does when he shuts his eyes to the teaching and inspiration of Nature. For construction stands to the architect very much as natural form does to the painter. It has its fixed laws which the artist must understand and obey, and which must find expression in his work if it is really to live. In proportion as it does this it is right and good; and in proportion as it disguises or ignores the laws of good construction so far does it sink to a lower level and become of little or no value.

But, provided this great principle of good Architecture is observed, there is ample room for development in very different directions. The material conditions no doubt come first; they set the problems of construction which have to be solved, and supply suggestions for new methods to suit new requirements. But the solution will be found in very different ways by different people and at different times. The social habits, the religion, the political system, and not least the native temperament of each nationality will enter into the question and influence the evolution of its Art. All these are important factors in the national style that is evolved, and they demand to be expressed in it no less imperatively than those conditions of a material kind which are imposed by methods of construction. It is thus that the various styles of different races and ages have arisen. Though all based originally on simple constructive methods, they have under varying conditions resulted in very different forms of Architecture. The marble quarries of Greece suggested a trabeated style; the hardness of the material and the brilliant and more vertical sun suggested the contours of the Greek mouldings and cornice, and the result was the Parthenon. The different needs of Roman society, and the economy and convenience of brick and concrete, resulted in the Pantheon and the Baths of Antonine, and the arches of the aqueducts and gateways. These were the truest and noblest works of the Roman ; the weakness of his Architecture lay in his adherence to the outward forms of trabeated construction when he had in reality abandoned its principle, and there is no better illustration of the maxim for which we are contending than this.

And it is the same with the modern or post-Roman styles of Europe, which differ from the parent style of the Empire of the Cæsars not only in constructive methods but in expression of character. Enough has been said in the preceding chapters of the difficulties of the early schools, of their lack of material and appliances, of their want of skill, and the shortness of labour which made it impossible for the Romanesque builder to build as he aspired to do *more Romanorum*, and which in spite of himself happily diverted his efforts into new channels, and led him to the discovery of novel principles of construction. We need not further allude to these material influences. But other influences were at work, personal to himself, which, though they did not suggest the new methods by which he found relief from his troubles, nevertheless made them welcome to him. What strikes one more than anything in the history of the Architecture of post-Roman Europe is the extraordinary receptivity of the artist; his aptness to lay hold of new ideas; his freedom, or rather his comparative freedom, from prejudice and subservience to prejudice, and the welcome accorded to suggestions of progress from good to better. This progressive spirit grew stronger as the style developed. In the eleventh and twelfth centuries there was a certain hanging back; a clinging to old forms; a reluctance to give up the round and take to the pointed arch. The practice of the art was still mainly in the hands of the clergy, who were conservative and afraid of novelty. But in the thirteenth century, when the art passed into lay hands, it developed with extraordinary rapidity,* and from that time till its decline and fall before the Renaissance of the fifteenth and sixteenth centuries it passed from phase to phase in a marvellously short space of time. The next generation to that which saw the building of the Norman nave at Peterborough witnessed the erection of its Early English west front. The grandchildren of those who remembered the completion of Henry III.'s Choir at Westminster might have seen the beginning of Perpendicular Architecture at Gloucester. The whole period of pointed Gothic Architecture from the work of English William at Canterbury to Henry VII.'s Chapel at Westminster is less than three and a half centuries, during which comparatively short time it passed through no less than four distinct and successively developed styles—all original, and unlike anything the world had ever seen before.

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* The Edinburgh Reviewer aptly points out that this great outburst of architectural energy coincides with the beginning of a national feeling in France under Louis le Gros (1108–1137), and in England under Henry II., when the fusion of the conquering and conquered races was taking place.

If we contrast this amazing versatility with the history of Classic art under the Roman Empire we shall find an apt illustration of the different ways in which the suggestions derived from construction are acted upon at different times and by different peoples. The adoption of the arch as an element in their Architecture involved for the Romans necessities as novel and imperative as any that the Gothic men had to face. They adopted these new principles of construction and carried them out to their legitimate development, and gave the world the stupendous domed and vaulted buildings which still excite our admiration. That the principles of arcuated construction contained suggestions of still further development we know from what happened in the twelfth and thirteenth centuries of our era. But the Roman, having perfected his style, was therewith content, and he carried the art no farther. Like the Roman Empire, which established in all parts of the civilised world its own institutions, civil and military, so the Roman Architecture spread with little variety over the subject lands, from the deserts of Palmyra to the sands of Libya, to Spain and Gaul, and even with some provincial modifications to the remoter shores of Britain. As in the sphere of politics the stamp of Rome was impressed on every institution throughout the Empire, and as every provincial municipality was a miniature copy of the Imperial city, so in every corner of the vast Empire we find temples, baths, basilica, forum, theatre and amphitheatre, recalling, sometimes humbly enough, sometimes with almost equal splendour, the edifices of the capital ; but always, for century after century with scarcely any variety, built in the style which was accepted as typical of Roman supremacy. The single principle in the economy of the Roman world which centred everything in the Imperial city found exact expression in the monotony and unchangeableness of the companion Architecture.

With the incoming races that overthrew the Empire and took its place everything was different. To the simplicity and repose of the Empire succeeded a world of jarring nationalities. For obedience to the Imperial rule of a single master was substituted the rivalry of petty chieftains and the sturdy independence of the individual. The simple monotony of the Classic style was no fit exponent of a society so complex and disorderly, in which every man thought for himself and claimed a more or less complete liberty of action. Even had there been none of the practical difficulties in the way of reviving the old Roman art which have been pointed out, it was inevitable that Architecture could never have returned to its old monotony, but must have taken fresh directions, in order to satisfy the restless temper of the new social era. We know what direction it did take, and we can see how exactly Gothic architecture corresponds to the social conditions of the Middle Ages and how well it expresses them. It is the style of Individualism:

it is bound by no rigid formulæ; it can adapt itself to any conditions, however novel; it can be plain or rich, simple or ornate, modest or magnificent; it can take any shape that suits the occasion, and yet remain all the time the same style, so long as it is true to itself and faithfully follows the suggestions derived from the constructive problems set before it.

We must therefore allow full value to the influences of social and individual character on the form taken by the various styles of Architecture in the past, but the preceding pages will have been written in vain if they have not proved that behind these influences a constructive reason must be looked for as the root and origin of all sound Architecture, and that the art when in healthy state has a reason for every fresh departure in some condition external to itself. This after all is only saying that no new style was ever invented by an effort of conscious design. It is impossible that, in the words of the Edinburgh Reviewer, it should "have existed in the minds of the builders before it existed as architecture." * It always came by itself, unconsciously on the part of the artist, arising as it were naturally out of the conditions of the day. To clamour with some

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* *Edinburgh Review*, *ut supra*, p. 191.

foolish people for a new style, as if it could be had for the asking, to parade your *Art nouveau* as if it sprang from some deep artistic inspiration, instead of being, as it is, a mere bubble of vanity and eccentricity, is to ignore the whole teaching of history. Not so did the great styles of the past come into being. They were heralded by no advertisement, marshalled by no trumpeting of self-laudation; they came not by observation but stole in gradually, and grew up insensibly and unconsciously, guided by reason, not by vain caprice, rather clinging to the old ways than snatching greedily at novelty for the mere sake of novelty, advancing leisurely and often almost reluctantly on the path that reason pointed out. It was in the suggestions of construction that the architect of the great artistic ages always found his truest inspiration, and the artistic element in the design was occupied not in obscuring or ignoring these considerations but in illustrating and expressing them.

CHAPTER VIII

ANCIENT EXAMPLE AND MODERN PRACTICE. USE AND ABUSE OF ORNAMENT. CONCLUSION.

HITHERTO we have been dealing with the styles of the past, and trying to trace in the main features of their design the influence of those motives, partly external, arising from considerations of good construction, or convenience, or limitation of resources; and partly internal, depending on the social or individual temperament of the builders themselves. In proportion as these are understood will be the degree of enjoyment we shall receive from contemplation of the Art of past times. Because it is by his own way of encountering these difficulties and by the display of his own way of doing things and thinking about them that the artist shows himself in his work: and it is on the amount of himself which the artist puts into his art that the value and interest of Art consists.

But the purpose of the preceding pages goes beyond a mere archæological disquisition on the meaning of bygone styles, whether Classic or Gothic. However important it is that their meaning should be properly understood by all who take an interest in them, it is doubly important that the lessons they teach should be turned to account for our guidance in the future. For those of us who are artists, or going to be artists, it is the Art of to-day that should be of the first consequence, and our study of the Arts of our forefathers should not be a matter of mere historical research however interesting, but such as will enable us to catch the spirit that inspired it, and in that spirit to do better work of our own. And for the general body outside the profession it is scarcely less important that they should bring to the judgment of modern work the same canons of truthfulness and reasonableness by which when they examine it intelligently they find the best old work was governed. As we said before, it rests after all with the general public whether the work done at any period shall be good or bad, and it is essential that they should be educated, not only to understand the principles of good design in the past, but to apply the same test to the work of the present day. For the same rule that governed all true and living styles that the world has ever seen must govern the Architecture of our own day if it is to be worth anything. Unless it is based on sound construction it will be but an empty sham.

That this has been overlooked in our modern practice is obvious enough. It has been the fault of all revivals of bygone styles that what has been imitated was not the motive principle but the outward details of the style. It was so with the Classic Renaissance of the Post-Gothic period. It was so to an even greater extent in the Gothic revival of the last century. As long as the outward forms of the style were in evidence the building passed muster as orthodox. Sashed windows, for instance, were pronounced hopelessly Classic; but if you put a half-mullion of stone in front of the sash-frame it became Gothic. Mouldings and traceries were slavishly copied and repeated, the bad drawing of the figures in the old painted windows was carefully imitated in the new, and it was sufficient justification for anything to be able to point to a precedent, even though the circumstances might be quite different. All the books on Architecture were in the same story, from Palladio to Chambers, and from

Chambers to Pugin. It was with the externals of the style that they dealt, and by mere precedent that they were governed. As chimneys are necessary for us, and since there is no ancient precedent for a chimney, Chambers approves Scamozzi's suggestion that they should be disguised as vases or obelisks, or something of which there was a classic example. All sorts of domestic inconveniences were put up with in order to secure that symmetry which was thought essential to a classic design, though the classic house, about which we really know very little, was probably much freer from these restrictions than the modern imitation.

It will readily be understood that this respect for mere outward form, irrespective of meaning, leads, in unworthy hands, to various kinds of sham and deception. To adopt inconvenient plans and forms out of mere regard for precedent is bad enough, but it is far worse when they are not really adopted at all, but represented by a figment. Take, for instance, the fictitious half-timber work which forms the adornment of hundreds of villas in the suburbs and the country. That which reminds the innocent observer of Shrewsbury or Chester is known by the better informed to be nothing but boards, an inch in thickness, nailed on to the wall with plaster between them; or at the best it is only thin framing sunk in the brickwork, doomed to speedy decay, and impairing the strength of the real wall behind. Yet this dishonest work is accepted by the public as right and proper; designs full of it are approved by Art masters and sent up year by year from Art schools throughout the country for the National Art competitions; and special regulations regarding it are actually incorporated in the by-laws of every local board or council. It has no constructive meaning, but it imitates a form of bygone art in appearance though not in reality, and that is enough for the modern critic.

The working of the same false principle may be traced in the Lesser Arts, as it is the fashion to call them; in our furniture and household appliances, our plate and crockery. All these articles have their own uses, and each ought to have the form best suited to its function. The form, in fact, should be founded on utility, and if any ornament is bestowed upon it, it should not be applied at random, but be so disposed as to emphasise the construction. Treated on this principle the humblest domestic implement may have a certain beauty of its own, arising from the fitness of its form to its purpose. You seldom see a bad shape in the simple pottery made for use by the peasants in France and Italy, and still surviving in some parts of England; because the traditional form derives its beautiful lines ultimately from convenience of handling and carriage and use. There are no better examples of sensible and consequently beautiful design in simple utensils than the bronze vessels found at Pompeii. Take the braziers, for instance, at which the Pompeians warmed themselves in winter, a kind of open trough with a leg at each corner. The sides are of plain smooth metal, unornamented, for ornament would have been out of place, but the top edge, which would otherwise have been thin and weak, is thickened, and run with delicate mouldings. Here comes in the first instance of a decorative motive based on utility. Then the attachment of the legs to the body is expanded for strength, and this suggests further decoration by modelling a mask or part of a figure on it. Then again the foot needs expansion in order to stand steadily, and it is therefore modelled with a claw or a hoof. All these slight decorations are made instrumental in emphasising the construction, and they are confined to constructive features, the rest of the work being kept plain and unadorned, and the brazier remains a brazier pure and simple.

The same principle governs all good design in the work of what for want of a better name are called the Applied Arts. There should be a reason to govern their design no less than there is for work on the grander scale of Architecture. But in modern practice this is often the last thing thought of. Instead of considering what shape will best fulfil the purpose of the thing he has in hand, the designer thinks of some object or other that he may imitate. Why else should the West-end shopman sell you a paper clip fashioned into a horseshoe, or an inkstand like a wheelbarrow, or brooches and sleeve-links made of crossed cricket bats, or tennis rackets? Why should honest floorcloth pretend to be tile paving, or India matting, or wooden parquet, or anything but what it is, and what it need not be ashamed of being? In modern jewellery the shape proper to the article seems to be the last thing thought of. A brooch, for instance, is properly a buckle for holding drapery together, and in antique jewellery and the beautiful peasant jewellery still surviving in some parts of Europe this function supplies the motive of the design. But the Birmingham jeweller looks upon his work as a mere vehicle for the display of precious stones, not as a thing of use, of which the stones are to form the decoration; the constructive idea which even in these minor instances should supply the motive of the design is lost sight of, and the meaning of the object itself is forgotten, while the designer's whole attention is given to its unmeaning decoration. What, for instance, can be less like a drinking-vessel than a race cup? What are we to think of a West-end firm, of whom one is used to expect better things, which advertises diamond brooches made in the form of pigs, cock pheasants, motor-cars, horses, with or without jockeys on them, and scampering foxes?

These may seem trifling instances, condemned by their own absurdity, but they serve as illustrations of design from a wrong basis—of the unintelligent imitation of form without any reference to its meaning, and a total disregard of proper construction.

To return to the larger field of Architecture; we shall do well to consider how far the principle of Reasonableness which we have attempted to lay down accords with our modern practice. Reason requires that new needs and new methods of construction should find expression in the Architecture of the day, and history tells us that suggestions from causes such as these have been the most fertile source of new departures. So at least it has always been with the Art when in a state of healthy natural growth. And if ever there were a time when new materials and novel forms of construction were coming into daily use, it is so now. For one way of making a wall, a floor, a partition in our fathers' day there are a score offered to us now. The use of machinery supersedes labour; facilities of transport give us unlimited choice of material, unfettered by restrictions of locality; the varied requirements of a more artificial age create new demands on plan and arrangement: schools, asylums, hospitals, buildings that were never dreamt of in the days when the bygone styles were alive, are springing up everywhere, and daily increasing in elaboration, demanding daily fresh treatment to satisfy the constantly changing theories of sanitary science or educational necessities. In these and similar novelties one would think there would be no lack of suggestion to the modern architect if he resolutely faced the situation and grappled with his difficulties. It is hardly necessary to point out how far he has been from attempting anything of the kind. On the contrary, our aim has hitherto been to stick as closely to our old types as the necessities of modern life will allow. What, for instance, has been the effect on our street architecture of the use of ironwork. An age of puff and self-advertisement demands that in a street of shops the whole front wall of the ground floor storey shall disappear, and the upper floors shall be carried on iron girders. Here is such a radical change in construction that one would think the whole type of street architecture would be affected. And yet we go on building the upper storeys just as if nothing had happened on the lower floor, and it were constructed as of old with brick or stone instead of being filled with a sheet of plate-glass; and what is more, our Building Acts practically insist on our doing so.* This surely is contrary to all common sense as well as to the elementary rules of architectural design. If in spite of the recent warnings we have had of the perils of iron construction the modern open shop-front is to continue, we should boldly face the condition and try what can be done to treat it artistically. To bring iron construction within the pale of Art, it is in the first place necessary that it should be seen, and at present the chief object of the builder seems to be to hide it. The girder that carries the whole front above is concealed by name-boards or facias, and the iron stanchions are rendered invisible by a casing of looking-glasses. If all this were shown honestly without disguise, the eye, learning by habit to appreciate the greater tensional strength and rigidity of iron, might come in time to accept the new construction instead of the old with satisfaction. But so long as the building appears to the eye to stand on the edge of sheets of plate-glass its architectural redemption is hopeless.

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* The Building Act, by its by-law requiring that the voids in an elevation shall not exceed the solids, without making provision for the distribution of voids and solids storey by storey, directly encourages, and indeed enforces, this ridiculous mode of design.

When we come to the upper part it is obviously inconsistent that its construction should remain unaffected by the radical change that has taken place below. The oriel windows that balance themselves insecurely on the middle of a girder, the corner turrets that ride on nothing, the arcades and—Heaven save the mark!—the domes that we see soaring upwards with no visible means of support on *terra firma;* all these things belong to the older styles of building, with which the new style has nothing to do, and they should be rejected as impertinent.

A notable instance of the blind faith with which the public clings to the conventional is furnished by the Tower Bridge in London. There was a grandeur about the engineer's work when it stood complete by itself, a structure of simple ironwork. But civic taste could not stand it, and as some enclosure was needed for the lifts and stairs the architect was called in and the towers were encased in sham castles of masonry, on which the chains seem to the eye to pull with a force to which they are obviously unequal.

If we are to make iron our main constructive element we must break with the old traditions of brick and stone, and adopt a method of design more suitable to the new material. It has often struck me that the half-timber work of the fifteenth and sixteenth centuries contains many suggestions for this new way of building. In the first place it is a *trabeated* style in the literal sense of the word, a style of posts and beams. It was a reversion from the arcuated construction of Rome and the Middle Ages to the trabeated style of the Parthenon and the older buildings before it, which translated into stone the forms of timber construction from which they were derived. And iron construction is very like carpentry. It, too, is a system of trabeation, of posts and beams, ties and braces; it has the tensile strength and rigidity of timber in a superior degree, and it hangs together by its joints, cleats and bolts, much as carpentry does by its tenons and mortices. Why should not the superstructure of the shop-front be framed with a skeleton of iron filled in with nogging or thin hollow walls, faced perhaps with glazed bricks in colour, for enclosing the habitable part of the house. On the ground floor the great bressummer with its supports would be exposed to view, and the plate-glass would be framed between them, and not in front so as to hide them. Each upper storey might slightly overhang that below to protect the great girder on which it rests, and all the skeleton of ironwork would be exposed on the surface in the same way as the framing of half-timber at Shrewsbury or Chester. The interior partitions would be framed in the same way, and the floor be made of concrete and iron. All the constructive members of the façade would thus be exposed to view, and could be regularly examined and painted, a matter of the utmost consequence, for the life of iron work when not excluded from the air depends absolutely on its thin skin of paint. A building of this construction would be rather a fascinating experiment, but I may add it would be condemned by the by-laws of every local authority in the kingdom.

Whether or no this mode of building will continue is a question that cannot be adequately discussed here. Iron construction is really still in an experimental stage; we do not yet know how it will stand the test of time. Meanwhile, all experience hitherto tends to show that an architect who wishes his building to go down to posterity will do wisely to let iron play as small a part in his construction as possible. It has been prophesied that thirty years hence no one will employ iron in his buildings, at all events as the main element in their fabric. The failure of a single tie-rod seems to have been the cause of the collapse of the roof at Charing Cross Station, and it is certain that no monster roof of that kind will ever be put up again.* To say nothing of great railway and other engineering works, it is disquieting to think of the miles and miles of streets in

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* I have it on the authority of a member of his family that the contractor who put up the largest of these monster roofs said at the time that they would not last, and that something would happen within about forty years. Something has happened to one of them sooner than he expected. A well-known civil engineer tells me that his rule is never to employ iron when he can use brick or stone.

London and other towns where the whole of the upper storeys rest on girders accessible to atmospheric changes, liable to rust and fatigue and possible injury by vibration, which no one can examine and which cannot be repainted.

This, however, is beyond the scope of our subject ; the lesson for us as artists is that we have missed the opportunity of advancing our art in a new direction which a new mode of construction should have suggested.

It remains to touch upon another point, and to show how the recognition of construction as the basis of all good design will prove a wholesome corrective to one of the worst vices of modern Architecture. Nothing will do more to relegate the use of ornament to its proper place, and pull it down from that throne of ascendency on which it has been seated by the ignorance and indifference of the outside world. It is not too much to say that to the ordinary person Architecture and Ornament mean the same thing. "So we see," says one authority, "that Architecture is only ornament applied to building." Acting on this pernicious maxim our architects line the streets with façades on which they crowd in lavish profusion as many architectural features as they can find room for. If this is Architecture they are architectural with a vengeance. On one front as much detail is sometimes crammed as would have served our forefathers for a dozen. The eye, wearied with this plethora of entertainment, seeks in vain for some plain space on which to repose. The use of terra-cotta has unhappily given great facility for this abuse of ornament. Properly employed as it was in Italy, at Cremona, Pavia, Milan and elsewhere, and in the fine roundels at Hampton Court, in the tombs at Layer Marney in Essex, and at Sutton Court in Surrey, terra-cotta is a fine plastic material. Torrigiano's noble figure of Dr. Young in the old Rolls Chapel shows that in the hands of a capable artist it is scarcely inferior to bronze or marble. The temptation to abuse it lies in the ease with which it lends itself to cheap repetition. When the mould is once made it is as easy and it costs no more to repeat an ornamental piece than a plain one; and this is a snare to the vulgar designer, whose object it is to make his building as smart as he can, and who welcomes the opportunity of smothering his work with ornament that costs nothing at all either in thought or in pocket.

Were this repetition confined to mouldings, or such simple conventional ornaments as the egg-and-dart or bead-and-reel, and similar abstract forms, it would be fair enough. They are somewhat mechanical even when cut by hand, and are not much the worse for being produced by a mechanical process. But it is only such humble details as these that are tolerable when repeated. The frequent repetition of higher forms of ornament is intolerable to any cultivated eye; when continued long it disgusts and fatigues with the sense of labour wasted and thought misapplied and vulgarised. No such distinction, however, is drawn by those who pander to the popular taste for splendour, and in their hands terra-cotta has been abused to an extent that has led to its being discredited by men who work on more restrained lines.

Self-restraint in the use of ornament is indeed one of the first lessons that the architect has to learn. There is so much to lead him in the contrary direction. At the outset of his career, fresh from his early studies, and fired by the enthusiasm of youth, he is tempted to empty the whole contents of his sketch-books on the first design of his own that he has an opportunity of carrying out. It is a hard lesson for him, though a necessary one, to realise that often the half is more than the whole, and to learn that he must economise his materials and keep his exuberant fancy within due bounds if his work is not to run rapidly to seed.

And then there is the other temptation, which means a good deal to a man still on his promotion, that showy pretentious work, full of so-called ornament, is what the popular taste runs to. So at least one is led to conclude, sadly enough, by comparison of the output of work of this kind with that which shows a modest reticence, or a reserve of power. Smartness and plenty of ornamentation appeals to the least intelligent observer: it makes no demand on his thinking powers; he does not pretend to know much about Architecture, but he pronounces the building handsome and rests content. While this is the popular taste there will never be a lack of architects to meet the demand. If this showy work is accepted easily by the public, it is produced easily enough by the designer. It takes much less thought to cram on to your building all the cheap unmeaning ornament you can think of than to study grace of proportion and harmony of parts, proper distribution of detail and the subordination of what is inconsequential to what is essential. The man who cannot design flies naturally to ornament to get him out of his difficulty and cover his incompetence.

This view of Architecture, which treats a building simply as a vehicle for carrying showy detail and smart enrichments, is on the same footing as that of the jeweller or silversmith who forgets that the thing he is making has a form proper to its use which should govern the design: that if it is a cup, it should be fit to drink from; or, if it is a brooch, it should be good for fastening drapery together; or if a spoon or fork, that it should be smooth and well shaped for eating with. Forgetting or ignoring all this, he treats the things he makes as mere opportunities for ornament that, so far from having any relation to their use, are often actually destructive of it. For instance, one has even seen the bowls of spoons stamped out into high relief, so that eating with them is an impossibility.

To the corresponding abuse of ornament in Architecture, which does so much to debase the work of to-day, there would be no more wholesome corrective than the habit of referring all architectural design to the test of construction. It is by this that the general forms of a composition should be tried; and the more purely decorative details should be such as will best illustrate and express what may be called the anatomy of the structure. They should, in fact, be like the drapery of a fine statue, which, far from contradicting or concealing the lines of the figure, serves to express and indeed to reinforce them. Tried by this test, how absurd will that wholesale unreasoning use of ornament appear which many people mistake for the essential part of Architecture. For, if the origin of all good constructive forms may be traced to some reason, as in the foregoing chapters we have tried to show, so also should ornament be reasonable and have a meaning. It should be reserved for the more honourable parts of the fabric, and in each case have the character suitable to the function of the member it adorns. In the capital it should, as a rule, have strong upward-thrusting lines to express resistance to the load it bears. In the freize and walls, which are passive members of the construction needing an expression of solidity and mass, the decoration should be on the surface more or less delicately relieved, perhaps like Giovanni Pisano's figure-subjects at Orvieto, or perhaps only like the shallow diapers of the walls at Westminster which rob the wall of none of its apparent strength.

Doorways have always invited decoration.

They are constantly seen, for one is always passing through them; the work is near the eye and easily examined, and a certain stateliness befits the entrance which introduces to the building. And so we get the lovely doorways of Como, set in an otherwise plain marble wall, and the splendid portals of the French cathedrals, Paris, Amiens, Bourges, Reims and the rest, which we have considered in a former chapter; and the more modest doorways of Rochester and Ely; and the hundreds of curious arched heads and tympana with which our own Norman builders delighted to decorate the entrance of their churches—works often rude enough, but full of vigorous life, and so highly esteemed by the country folk that when in later days they rebuilt their church in a more refined style they constantly preserved and reset in their new walls the rude old sculptured portal of the Norman building.

The window, again, though it played no noticeable part in ancient Architecture, has from the twelfth century downwards been treated with even more attention than the doorway. The two together, in fact, form the most important features in an architectural elevation, and therefore demand special treatment. Windows, with their dark piercings of the wall, afford the artist opportunities for brilliant contrasts of which he has not been slow to avail himself. They inevitably attract the eye, and naturally invite decorative treatment. And so the Norman enriched their jambs by shafts with bases and capitals, and he girdled their arches with zigzags and such rude conventional ornaments as his skill attained to; and his successors filled the openings with lovely traceries, strongly relieved against the dark background of the glazing, and surmounted them with the crocketed gablets of Amiens, or the more restrained hoodmoulds of our English Gothic.

There is no better example of the reasonable use of ornament than that furnished by the typical Venetian palace. The decoration is confined almost entirely to the windows and doors, which are set in a plain wall, faced, it is true, with marble, and touched sparingly here and there with colour in bands or panels, but otherwise smooth and unbroken, furnishing, as it were, the canvas on which the picture is painted, a mere neutral surface, with nothing to draw the eye away from the principal features. The doorway is stately, and approached by a noble flight of steps from the canal, which lend it dignity. But it is on the windows that the architect has lavished most of his art, and surely no more lovely conception has ever entered an artist's brain than these marble traceries, brilliantly relieved by their dark piercings, and the graceful balconies with their delicate marble balustrades and the beautiful consoles on which they rest.

These are instances of ornament rationally applied to emphasise the more important parts of the composition, instead of being flourished over the whole surface alike, as is done so frequently in the smart new Banks and other buildings that grieve the eye and sadden the heart in almost every town in England. Good ornament is too precious to be wasted; it should be used sparingly, only on features that are worthy of it, and only where it can be seen and enjoyed; and it should never outstay its welcome and cause fatigue. The plain unbroken wall-surface which the bungler tries to get rid of will be valued by the true architect not less than the positive features of his design, to which it affords the relief necessary to do them justice. For the extent to which he should employ ornament the architect needs above all things to preserve a due sense of proportion. The moment ornament becomes supreme, drawing attention chiefly to itself and making one forget the thing it decorates, which thing is indeed the sole reason for its existence at all, that moment does it become an excrescence that should remorselessly be pruned away. It debases the Architecture by treating it as a mere framework on which to display its own extravagance. And the same condemnation should fall upon all ornament unworthily bestowed on features that are unimportant, or placed where it has no relation to structure, or where it directs attention to the wrong place, or where it obscures constructive lines or contradicts them. So treated it is nothing more than an injury to the design, and would be a hundred times better away. There is no reason for its presence, and without a rational purpose ornament is a mere superfluity.

In conclusion, as the sum of all that has preceded, I would say that it is to the bar of Reason that I would have all Architecture brought for trial. If ever the Art is to live again among us as it did in times gone by, it must shake off the tyranny of the schools, and recover the liberty it once enjoyed of governing itself by the law of Reason rather than by that of authority and precedent. That the latter is the easier path of the two for most people to follow is shown plainly enough in many fields besides that of Art; but it is a path that leads round and round in a circle and tends in nowise to further progress. It will always be much easier to run in a rut than to strike out a new path for oneself; and those whose convictions lead them to diverge from the beaten track will find many obstacles in their way and much unpopularity to contend with. The pioneers in any movement must expect to meet with much discouragement at first, but in this case I think the movement towards greater liberty is already beginning to draw adherents. Among our younger architects and architectural students there is an increasing number who have revolted from the doctrine of imitation, and have foresworn the conventional ornaments of bygone styles, and replaced them by a studied restraint and simplicity which gives their work a certain character; and character is of course one of the elements of good and original design. The new school—for it almost amounts already to a school—has its dangers: that goes without saying. It is well to be simple and restrained, but it is possible of course to carry simplicity to the point of insipidity, and reticence to the pitch of dulness, in Art as well as in manners. A still greater danger is the opposite temptation when avoiding the Scylla of conventionalism and imitation of the past to fall into the Charybdis of a forced originality that one does not really feel. To seek originality for the sake merely of being original, when one has nothing whatever to say that has any claim to originality, is pure affectation, and surely as base a motive as ever entered into the heart of any one pretending to be an artist. Better far the dull proprieties of the old-fashioned Purist than the extravagances that have been puffed and belauded under the title of *L'Art Nouveau*. True originality must have a reason, in the absence of which originality is mere impertinence.

If it be asked what place under the principles that have been advocated is left for the use of ancient example, the answer would be that its influence would be as valuable as ever, but that it would be exercised in a different way. In future our forefathers' works would be not so much our model as our tutor. We should refer to them for guidance just as the modern literary man does to the Classics, not to copy them but to form his style upon them. The letter of the old work is dead for us; it is the spirit that lived through all they did which survives to the present day, and will survive for all time in all really living Art now and hereafter. This it is that we want to catch, and we shall never get it by merely copying the verbiage in which it found expression at a different age and among different people.

The servile imitation enforced among the Gothicists of fifty years ago has no doubt given way to a freer use of the style, but there are still plenty of architects and a large section of the public interested in Architecture who look on direct imitation of old work as the only safe path in Art. It is still common for an architect to be asked in all sincerity, and without any suggestion of reproach, where such and such a feature in his design, if not the whole design itself, was taken from. There are still hundreds of people who think it impossible that a modern building should be designed in any other way. I leave it to the painters and sculptors to say what would be their feeling were such a question put to them.

Ancient example should, in fact, be for the architect what it is for the sculptor and the painter. There is no reason why we should not share their freedom, and none why we, any more than they, should be condemned for ever to wear the garb of bygone ages in which we shall never feel really at home. The mere copyist is, after all, only playing at Classicism or Mediævalism : he does not really believe in himself ; he is only masquerading, and when he goes out into the streets of real life he must leave his play-actor's trappings behind him. A living Architecture can never, any more than a living literature, be made up of elegant extracts from deceased authors, nor should a modern building remind one of a page from a dictionary of quotations.

Instead, therefore, of pulling himself up as he goes and looking back every few steps to see whether he is treading exactly in the footprints of those who have gone before, let the modern architect march straight on his point by the directest way. Here ancient example will encourage and direct him, for this is just what the men of old did, as we have seen when we followed step by step their progress in developing the Art which they inherited into something ever fresher and fresher. Let the modern architect be absolutely himself, not the mere player of a part. Let his object be to bring his Art into conformity with modern life and modern requirements, not to accommodate modern conditions of life to the Art of another and a very different period, an attempt which must end in disingenuous compromises, like the sham half-timbering and the fictitious mullions that were described above. If he should have to use iron as the main element in his construction let him give up the pretence of building in brick or stone. Let him design his construction so as to utilise to the best advantage the special qualities of his new material, and not treat it as he has been in the habit of treating other materials of different properties. And let him display his new mode of construction, whatever it be, openly and boldly instead of disguising it as something to be ashamed of. If he will but work honestly and truthfully on these principles he will be doing something towards quickening our somewhat halting progress, because he will have recognised the truth of the maxim which I have taken as my text, that whenever it leads a healthy natural life instead of being a matter of convention and obedience to precedent, it will always be found that there is and must be REASON in Architecture.

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